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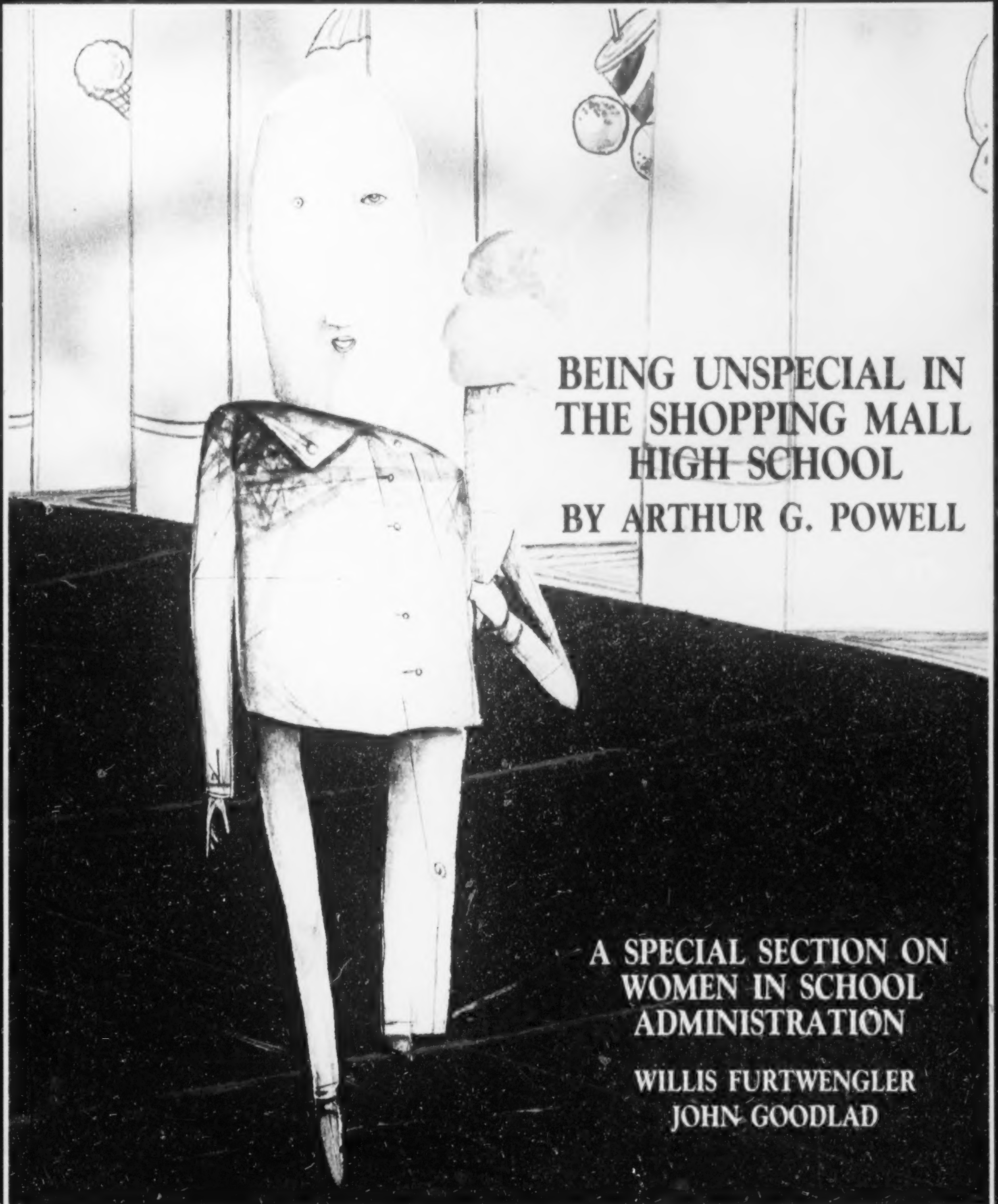
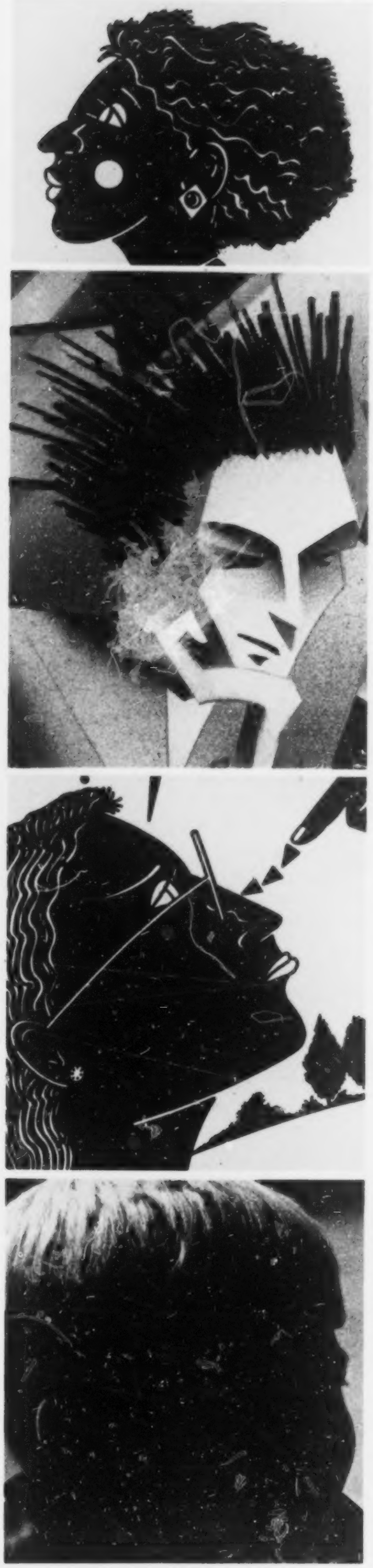


BEING UNSPECIAL IN THE SHOPPING MALL HIGH SCHOOL

BY ARTHUR G. POWELL

A SPECIAL SECTION ON WOMEN IN SCHOOL ADMINISTRATION

WILLIS FURTWENGLER
JOHN GOODLAD



Phi Delta KAPPAN

December 1985 • Volume 67 • Number 4

FEATURES

255 **Being Unspecial in the Shopping Mall High School,** *by Arthur G. Powell*

262 **Implementing Strategies for a School Effectiveness Program,** *by Willis J. Furtwengler*

266 **The Great American Schooling Experiment,** *by John I. Goodlad*

272 **ECS at 20: New Vitality and New Possibilities,** *by Donald H. Layton*

277 **Teaching Critical Thinking, Part 2: Possible Solutions,** *by Robert J. Sternberg*

Women in Administration

281 **The Female Educator at Midlife,** *by Mary Lynn Crow*

285 **Women Administrators: Profiles of Success,** *by Lillian C. Woo*

288 **Conflict and the Female Principal,** *by H. Lynn Erickson*

292 **Helping Women Prepare for Principalships,** *by Christa Metzger*

297 **The Woman in the Principal's Chair in Canada,** *by Karin L. Porat*

302 **A Letter from Australia: Vegemite and Apple Pie,** *by Ian Welch*

304 **Lowered Expectations: How Schools Reward Incompetence,** *by Bruce Jackson*

306 **How *Do* They Learn?,** *by Mary P. Melvin*

DEPARTMENTS

250 **THE EDITOR'S PAGE,** Watching the Watchers

251 **WASHINGTON REPORT,** *by Anne C. Lewis*

253 **STATELINE,** *by Chris Pipho*

308 **PAR, Adapting Instruction to Individual Needs: An Eclectic Approach,** ***by Deborah Burnett Strother***

312 **DE JURE,** Supreme Court Agrees to Reconsider First Amendment Rights of Students, *by Thomas J. Flygare*

313 **IN CANADA,** A Potpourri of Policy Issues, *by Stirling McDowell*

315 **PROTOTYPES,** Two-Way Instructional Television, *by William B. Kested*; Training Preservice Teachers for Inner-City Schools, *by Mae V. Gamble*

317 **BOOKS,** *Laurence D. Brown*

320 **NEWSNOTES**

325 **BACKTALK**

Cover Illustration: Kevin Pope

WOMEN • IN • ADMINISTRATION

Helping Women Prepare for Principalships

by Christa Metzger

Though female school administrators are still rarities, programs are emerging to help provide support to women on their way up the career ladder. An Arizona program known as Castle Hot Springs worked wonders for women in that state.

WHEN I BECAME principal of an elementary school in 1974 – the first (and, for some years, the only) female principal in my school district – I felt highly visible and lonely. Some of my male colleagues gave me fatherly advice; others just sat back and waited to see whether I would survive. At the first statewide conference of principals that I attended, I remember trying to pick out, amid a mass of three-piece suits, the sprinkling of other women who held principalships in the state. And Arizona was not the only state in which female principals were scarce in those days.

Women administrators are still rarities in U.S. education today. A 1982 study by the American Association of School Administrators (AASA) found that women hold only 16% of all U.S. principalships. (Twenty-three percent of U.S. elementary principals and 7% of U.S. secondary principals are women.) According to the same study, only 1.8% of all superintendents in the U.S. are women.[1]

Several factors are commonly cited to explain the small number of women in leadership positions in U.S. education. These factors include: sex-role stereotyping, sex discrimination, personal and family-imposed constraints, women's low career aspirations, women's lack of self-confidence and initiative, women's lack of sponsors within the existing power structure, and an insufficient pool of highly qualified women.

A variety of programs were begun during the Seventies to enhance women's administrative skills and thus their career opportunities.[2] Some of these programs prepared women for administrative positions through coursework, internships, or workshops. Others sought to enhance employment opportunities for women through affirmative action plans and the involvement of administrators already in the field. But the effects of such programs on women's advancement in school administration have not been carefully documented.

Data are available, however, on the outcomes of a training program conducted in Arizona from 1979 through 1983 for women who wished to become principals. That program measurably increased the number of female principals in Arizona; it also markedly improved attitudes in Arizona toward women as school administrators.

THE IDEA FOR the Arizona program arose in 1978, when five Arizona women (two assistant superintendents, one deputy associate superintendent with the state department of education, and two principals – of whom I was one) attended a training workshop in Los Angeles. The workshop was conducted in three U.S. cities that year by the AASA, with funding from the Ford Foundation. The purpose of the workshop was to provide experiences that would help women prepare for superintendencies.

Interest in the AASA workshop was high. Nationally, more than 600 women applied. Only 75 women were selected

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CHRISTA METZGER (Arizona State University Chapter) is superintendent of Tolleson (Ariz.) Elementary School District. She wishes to thank the following individuals for their help in gathering data for this article: Deborah Dillon, former project director of AWARE West; Ardeth Cropper, a member of the original steering committee, former superintendent of the Glendale (Ariz.) Elementary Schools and currently associate professor of school administration at Northern Arizona University; and Karen Lindberg, a doctoral student and former Castle Hot Springs participant.

to participate, however – 25 for each workshop.

On returning from the Los Angeles workshop, three of us formed the nucleus of a planning committee intent on starting a similar program in Arizona. But we decided that our workshops would focus on women who aspired to principalships, since female principals make up the pool from which female superintendents are ultimately drawn. The Arizona Department of Education agreed to provide a staff member to help us in our planning. From this first step grew a unique planning effort, cooperatively staffed and funded by Arizona School Administrators, Inc., Project Equity (a Title IV program), the Arizona Department of Education, and our steering committee of concerned women administrators.

Through the combined efforts of these groups, two workshops took place – one in 1979, the other in 1980 – for women aspiring to become principals. The training program came to be known as "Castle Hot Springs," the name of the picturesque retreat where the workshops were held, in the beautiful desert mountains north of Phoenix.

By 1981 the Castle Hot Springs workshops had become well-known to female educators and educational leaders across the state. They encouraged us to apply for a Ford Foundation grant, in order to fund the program for three more years – not only in Arizona, but in Colorado and New Mexico as well.

The Ford Foundation funded our project, and the sex-equity specialist with the Arizona Department of Education, who had spearheaded the planning effort, was officially hired as full-time director. As part of a national network of regional projects under the aegis of AASA's Project AWARE (Assisting Women to Advance through Resources and Encouragement), our newly expanded program was officially titled AWARE West.

In Arizona alone, between 1979 and 1983, some 40 to 50 women participated in the program each year. A total of 238 Arizona women took part over the five-year period. Most of the participants were teachers; the rest were entry-level administrators, i.e., department heads, consultants, counselors, or assistant principals. Most of the participants were between the ages of 36 and 41. They were selected to represent all areas of the state and all racial or ethnic groups.

THIS TRAINING PROJECT proved to be exceedingly effective. As Table 1 shows, 52% of all workshop participants became assistant principals, principals, or district-level administrators within four years after completion of the workshop. Sixty-three percent of the first group of participants have been promoted since their participation.

To place these findings in proper perspective requires a brief review of the recent history of principalships in Arizona. In the four-year period from September 1980 to September 1984, the number of female principals in Arizona increased from 121 to 217 (see Table 2). Thus the percentage of principalships held by women increased from 12% in 1980 to 25% in 1984. And, of the 217 women who held Arizona principalships in 1984, 70 (32%) had attended the Castle Hot Springs workshops.

As Table 3 shows, the percentage of females among the first- and second-year principals in Arizona has also increased. In 1970 about 10% of all first- and second-year principals in the state were women – a proportion that remained relatively constant through 1976, when about 12% of the new prin-

Illustration by Andrea Eberbach

cipals were female. Between 1976 and 1980 the percentage of first- and second-year principals in Arizona who were female fluctuated between 12% and 23%. In 1981, 24% of the new principals were women. However, when the 1983-84 school year began, 33% of all first- or second-year principals in Arizona were women. Moreover, a significant percentage of the new female principals in recent years have been "graduates" of the Castle Hot Springs workshop: 25% in the fall of 1980, 35% in 1981, 39% in 1983, and 48% (counting first-year principals only) in 1984 (see Table 3).

The number of women who are members of Arizona School Administrators, Inc., has risen during the same period (see Table 4), as has the number of women who hold leadership positions in that organization. Women accounted for 15% of the total membership in the fall of 1980 and for 28% of the total membership in the fall of 1984. The number of females on the executive board rose from 13% in 1980 to 36% in 1984. And, once again, many of the new female members of Arizona School Administrators, Inc., had been trained at Castle Hot Springs. For example, 39% of the female members in the fall of 1981 had been workshop participants.

Clearly, a variety of sociopolitical factors have helped women to move into principalships in Arizona. For example, an early retirement law that the state legislature passed in 1984 created several openings – and thus more opportunities for women to be hired. Without the Castle Hot Springs workshops, however, the pool of highly qualified female candidates to fill these vacancies would have been significantly smaller. The Castle Hot Springs training program has become, for Arizona women, a major steppingstone into administrative positions.

The program has changed the attitudes of potential and current women administrators about their own worth and their opportunities.

The program has also changed the attitudes of potential and current women administrators about their own worth and their career opportunities. In Arizona today, a strong network of women helps other interested women to achieve psychological and professional readiness for careers in administration. The mutual support and encouragement and the candid feedback supplied by this network have helped its members to en-

TABLE 1.

Promotions of Castle Hot Springs Participants, 1979-84

Year of Attendance at Workshop	Total N	Number of Promotions to Various Types of Positions*								Total Promotions		Number of Participants in Other Categories		
		EA	EP	JA	JP	SA	SP	ES	AS	N	%	Could Not Be Contacted	Moved, Retired, Left Education	Not Promoted
1979	40	1	9	1	1	5	2	5	1	25	63	7	2	6
1980	47	1	14	1	1	3	0	5	1	26	55	15	3	3
1981	55	2	10	0	3	2	2	8	2	29	53	15	4	7
1982	51	0	6	0	3	5	0	6	1	21	41	20	5	5
1983	45	2	11	1	0	3	1	4	0	22	49	14	9	0
TOTAL	238	6	50	3	8	18	5	28	5	123	52	71	23	21

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*EA = elementary assistant principal, EP = elementary principal, JA = junior high assistant principal, JP = junior high principal, SA = secondary assistant principal, SP = secondary principal, ES = educational services (district-level administrative position), and AS = assistant superintendent.

TABLE 2.

Gender of Newly Hired Principals in Arizona, 1980-81 Through 1984-85

	1980-81				1981-82				1982-83				1983-84				1984-85			
Level of Principalship	Male		Female		Male		Female		Male		Female		Male		Female		Male		Female	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Elementary	743*	87	115*	13	561**	81	128	19	554**	79	145	21	532*	75	180*	25	510*	71	206*	29
Jr. High School	—	—	—	—	63	93	5	7	85	89	11	11	—	—	—	—	—	—	—	—
Secondary School	147	96	6	4	141	95	8	5	119	90	13	10	130	92	11	8	130	92	11	8
TOTAL	890	88	121	12	765	84	141	16	758	82	169	18	662	78	191	22	640	75	217	25

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*Includes not only middle school and junior high principals but also all personnel classified as head teachers.

**Includes all personnel classified as head teachers.

Sources: Arizona Department of Education and Arizona School Administrators, Inc.

gage in honest self-assessment, to develop greater self-confidence, and to develop a stronger sense of personal identity. Even when Castle Hot Springs "graduates" have not been chosen to fill administrative positions for which they have applied, the teams who interviewed them have repeatedly stated that these candidates stood out because of their well-written résumés and letters of application and their careful preparations for the interviews.

WHY WAS THE Castle Hot Springs training program so successful? What were the ingredients that accounted for the positive outcomes?

The heart of the project was a three-day training workshop, conducted annually at the Castle Hot Springs conference center, a facility owned by Arizona State University. (In 1983 the university sold the conference center, and the final workshop was moved to the Rio Rico Resort in southern Arizona.) Three factors contributed to the success of the workshop: the process of recruitment and selection, the use of resident consultants, and a well-designed workshop agenda.

RECRUITMENT AND SELECTION

As the first step in the recruitment and selection of participants, Arizona superintendents and principals were asked to identify women whom they perceived to be potential leaders. This procedure helped to overcome one persistent obstacle that women have faced in obtaining administrative positions: the lack of sponsorship by someone within the existing power structure. Annual surveys of workshop participants have consistently shown that most of them first heard about the Castle Hot Springs program from former participants or from their own superintendents or principals.

The women who were interested in attending the workshops went through a rigorous application process that required paperwork similar to that necessitated by an actual job search. They were instructed to apply for a principalship in "Utopia School District" and to document their reasons for aspiring to this position. Each applicant had to supply a cover letter and a résumé, along with two letters of recommendation from educational leaders who were willing to attest to her potential as an administrator.

A screening committee – composed in the early years of recognized Arizona administrative leaders, but later including former workshop participants as well – selected the final group of participants. Approximately two-thirds of the applicants were included in this final group. The participants or their school districts paid a nominal fee for meals and lodging during the workshop.

The selection criteria included an applicant's desire to become a principal, as evidenced by enrollment in a certification program or attainment of an administrator's certificate; her work experience (with priority given to those applicants with some type of administrative experience); the quality of her letter of application and her résumé; and the quality of the letters of recommendation written in support of her application. The selection process also guaranteed the inclusion of individuals representing a variety of locations within the state, a variety of ethnic groups, and a variety of teaching assignments.

Once a candidate was accepted, the selection committee sent her application for a principalship in "Utopia School District," her résumé, and her cover letter to personnel directors or other top-level administrators in the state. Their critical appraisals of this paperwork were returned to the candidate during the workshop.

Each woman admitted to the workshop received a letter of recognition from her superintendent. The rejected applicants were invited to contact the

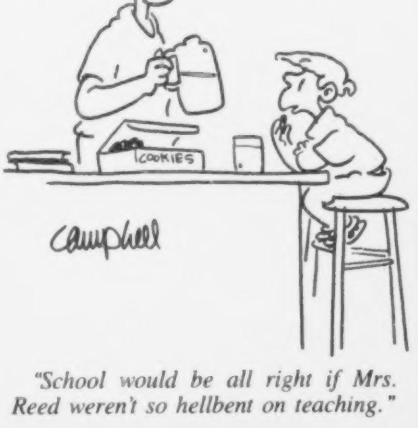
TABLE 3.
First- and Second-Year Principals in Arizona, by Gender

	Number					New Female Principals Who Attended Castle Hot Springs Workshop
		Male		Female		
Year	Total N	N	%	N	%	%
1970	90	81	90	9	10	0
1976	120	106	88	14	12	0
1977	75	58	77	17	23	0
1978	88	69	78	19	22	0
1979	104	87	84	17	16	24
1980	110	86	78	24	22	25
1981	96	73	76	23	24	35
1983	213	142	67	71	33	39
1984*	45	16	36	29	64	48

*Includes first-year principals only.
Source: Arizona Department of Education.

TABLE 4.
Officers and Members of Arizona School Administrators, Inc., by Gender

Year	Officers				Members			
	Male		Female		Male		Female	
	N	%	N	%	N	%	N	%
1980-81	54	87	8	13	805	85	138	15
1981-82	54	83	11	17	683	76	219	24
1982-83	45	79	12	21	681	75	232	25
1983-84	44	71	18	29	692	73	256	27
1984-85	37	64	21	36	722	72	274	28



"School would be all right if Mrs. Reed weren't so hellbent on teaching."

screening committee to find out why they had been unsuccessful. Many of these women reapplied in subsequent years and were accepted.

THE RESIDENT CONSULTANTS

About 20 consultants were available during each workshop to interact with participants. This created a participant/consultant ratio of approximately 2-1. The consultants were volunteers – two-thirds of them women, who were themselves successful administrators in Arizona or in neighboring states, and one-third of them men who held positions of power in Arizona education. These men included the executive director and the president of Arizona School Administrators, Inc., the associate executive director of the Arizona School Boards Association, the associate superintendent of the Arizona Department of Education, professors in the Department of Educational Administration at Arizona State University, and respected superintendents from various Arizona school districts.

The formal and informal interactions among consultants and workshop participants created an intense, but healthy and supportive, learning climate. During the workshop and in the months that followed, the consultants served as role models; they also provided a network of contacts for the participants. In several cases, consultants established ongoing mentor relationships with workshop participants.

THE WORKSHOP AGENDA

Each year, a planning committee worked hard to insure a balance of topics and activities on the workshop agenda. That agenda consisted primarily of activities that simulated a job search. The workshop always served as a laboratory in which participants could assess their administrative attitudes and competencies and practice such skills as interviewing for a job and writing a résumé.

Working in small groups, participants and consultants role-played the process of interviewing for a principalship in "Utopia School District." The consultants asked the participants standard interview questions, which had been collected from school districts around the state. Other members of the small groups observed each interview and gave the candidate immediate feedback on her strengths and weaknesses. The workshop participants rotated from group to group, so that they could observe the consultants' varying styles of interviewing. Each participant had an opportunity to be interviewed, as well as to observe and critique the performance of several other "applicants." The participants later rated this activity as one of the most valuable experiences afforded by the workshop.

In addition to simulated interviews and workshop sessions focused on the evaluation of résumés and letters of application, the agenda included presentations and activities on topics related to the job search. Workshop sessions covered such topics as "Women at the Top," "Stress and Conflicts Unique to Women," "Women Helping Women," "Getting the First Principalship," and "Competencies Needed for the Principalship." Group discussions addressed such issues as the role of the principal, how to locate vacancies, goal setting, teambuilding skills, career planning, and experiences common to first-year principals. The agenda also included social and recreational activities that encouraged the participants and consultants to interact.

Throughout each day of the workshop and late into the evening, the energy of the participants and consultants was directed not at bemoaning the fact of past discrimination but at developing the knowledge, skills, and attitudes that would bring about positive changes. By sharing fears, hopes, and successes, the participants learned from one another and began to realistically assess their own potential for leadership.

Participants stayed in touch after each workshop through regular newsletters, which announced promotions or special recognitions granted to the participants themselves or to other women administrators in the state. Each year, former workshop participants also gathered for an annual opening-of-school brunch and for a special meeting preceding the annual conference of state administrators. Current and aspiring women administrators also used frequent phone calls and informal get-togethers as opportunities to seek advice and to share successes. Over the years, a strong network developed among former workshop participants and workshop consultants.

THE FUNDING for AWARE West (Castle Hot Springs) has ended. But it is certain that at least some of the activities will be carried on.

Former workshop participants have appointed a steering committee to discuss and plan future activities, including a regular newsletter to maintain the network that the workshops established. In September 1984 the steering committee held the customary opening-of-school brunch, and nearly 100 women attended the event – many of them guests, who wanted to know whether they would have an opportunity in the future to attend a Castle Hot Springs workshop.

In March 1985 the inservice training committee of Arizona School Administrators, Inc., held a conference for men and women who aspire to administrative positions in Arizona education. And in June 1985 an organization for aspiring administrators, Arizona AWARE, was formed.

Without a doubt, the *effects* of AWARE West will endure. This training program gave several hundred Arizona women increased visibility and competence, better job-search skills, and the courage to seek positions as school administrators. Not all these women will become administrators. But all of them will certainly function more effectively as educators because of their better understanding of their own capabilities and of the administrator's role. And they will be better prepared, both psychologically and professionally, to apply for available administrative positions – and to be selected to fill these openings.

The impact of Castle Hot Springs is perhaps best illustrated by the following excerpt from one of the many letters sent to us by workshop participants:

> Your constructive criticism with regard to my interviewing technique was greatly appreciated. . . . I have revised my initial letter, my cover letter, and my résumé and have also updated [the references listed in] my placement file. The best part is that I am a brand-new principal! Can you believe it? I signed my contract yesterday. . . . My superintendent called me at work and told me that the board had been particularly impressed with my confidence and composure. He said it was the best interview he'd ever seen! The neat thing was, I knew it, too. . . .

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1. Effie Jones and Xenia Montenago, *Recent Trends in the Representation of Women and Minorities in School Administration and Problems in Documentation* (Arlington, Va.: Office of Minority Affairs, American Association of School Administrators, July 1982).

2. Ellen Kimmel, Dorothy Harlow, and Mary Topping, "Special Programs to Promote Women into Educational Administration," *Phi Delta Kappan*, April 1979, pp. 586-89. K

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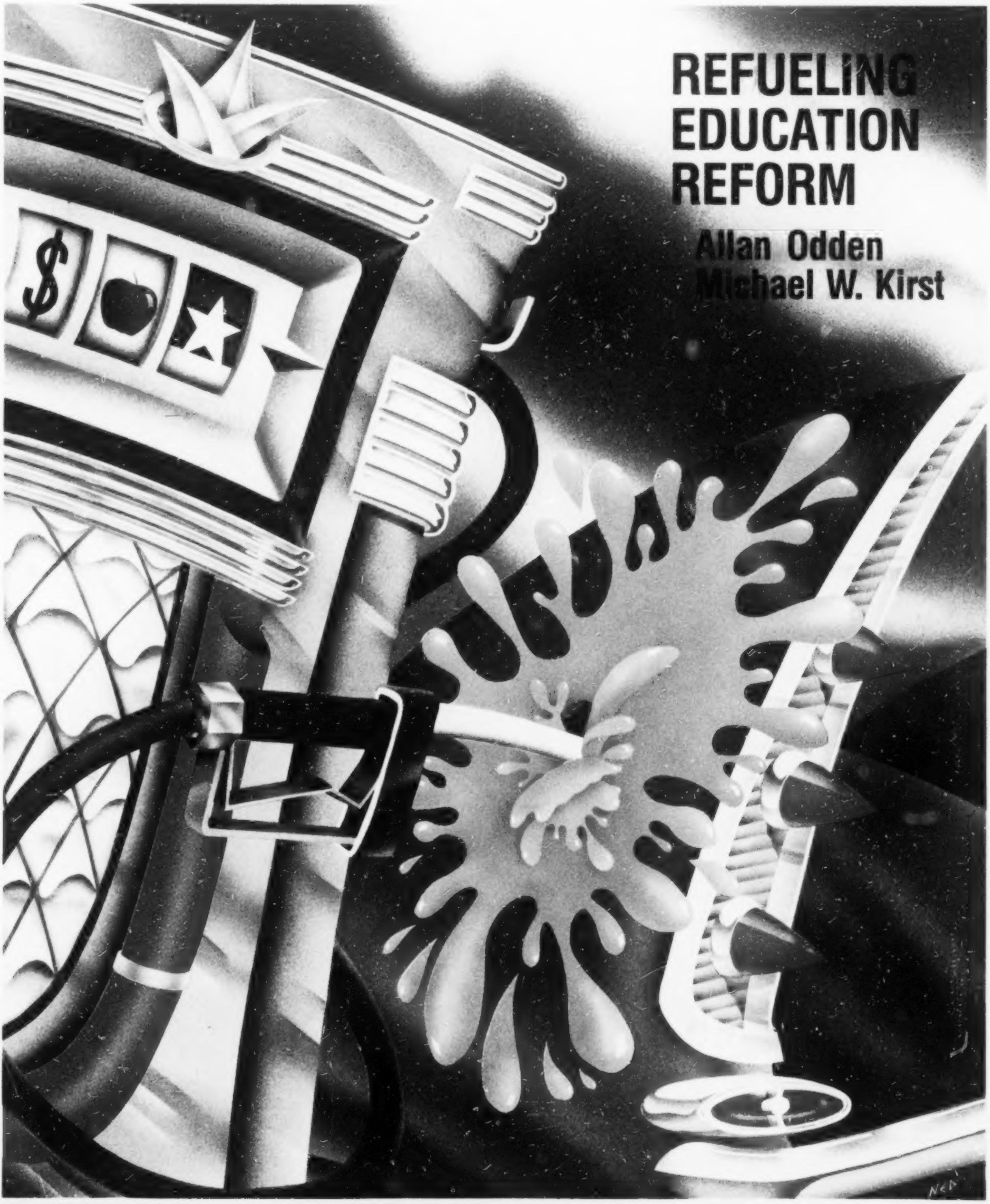
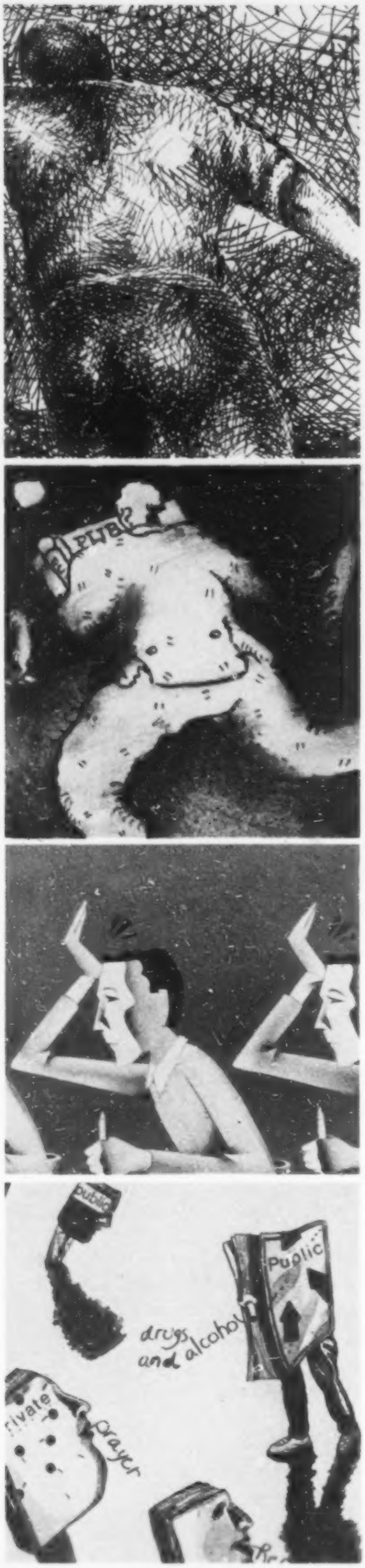


REFUELING EDUCATION REFORM

Allan Odden
Michael W. Kirst



Phi Delta January 1986 • Volume 67 • Number 5

KAPPAN

FEATURES

335 **Sources of Funding for Education Reform,** *by Allan Odden*

341 **Sustaining the Momentum of State Education Reform: The Link Between Assessment and Financial Support,** *by Michael W. Kirst*

346 **Should a Million and a Half Students Be Required to Take the SAT Next Year?,** *by James Crouse*

353 **Perspectives for the Reform of Science Education,** *by Paul DeHart Hurd*

359 **The Role of Native-Language Instruction in Bilingual Education,** *by José A. Cárdenas*

364 **Illiteracy and Inner-City Unemployment,** *by Michael Bernick*

368 **Public and Nonpublic Schools: Finding Ways to Work Together,** *by Phyllis L. Blaunstein*

373 **The New Private Schools and Their Historic Purpose,** *by Patricia M. Lines*

380 **Learning Communities for Curriculum and Staff Development,** *by Anne Wescott Dodd and Eileen Rosenbaum*

384 **The Madison Workshops – One Approach to Staff Development,** *by Howard Henderson*

386 **A School/University Partnership That Fosters Inquiry-Oriented Staff Development,** *by Forrest W. Parkay*

390 **Of Hopes and Expectations,** *by Judy Meloy*

DEPARTMENTS

330 **THE EDITOR'S PAGE,** Welcome to Dolan

331 **WASHINGTON REPORT,** *by Anne C. Lewis*

333 **STATELINE,** *by Chris Pipho*

392 **RESEARCH,** *by Gerald W. Bracey*

396 **DE JURE,** Teachers' First Amendment Rights Eroding, *by Thomas J. Flygare*

398 **PROTOTYPES,** An Effective Reading Program in a Rural Setting, *by Gary A. Negin*

399 **BOOKS,** *Laurence D. Brown*

402 **NEWSNOTES**

405 **BACKTALK**

Cover Illustration: Ned Shaw

Sources of Funding for Education Reform

by Allan Odden

Improving the quality of education is a costly endeavor, says Mr. Odden. Recent appearances to the contrary, funds for reform are actually in short supply. Revenues for education will do well to stay even over the next five years.

LESS THAN THREE years have elapsed since the release of *A Nation at Risk* and the accompanying calls to improve U.S. public schools. Yet a number of state legislatures have already acted on the basic recommendations of that and other, similar reports. Indeed, the education reform movement has moved faster than any public policy reform in modern history.[1] All the states have expanded their school improvement programs, nearly all have increased high school graduation requirements, most have stiffened college admission requirements, many are deepening the content of course offerings, and many are enacting a variety of policies to strengthen the teaching profession.

Moreover, signs in many states indicate that the reforms are being implemented as intended. A number of studies in California, for example, have shown that students are attending school longer, taking more and tougher academic courses, receiving better counsel-

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[illegible]

If education reform has helped to reverse the declining finances of the public schools, it has not opened a gushing faucet.

ing about their secondary school programs and about college admission requirements, and scoring higher on achievement tests. Teachers are being paid more, and in some states they have new career-ladder options.[2] The swiftness of action, the breadth of the reform programs, and the multiple indicators of progress in the right direction give reason for optimism about the ultimate success of the education reform movement.

A key issue in maintaining the momentum of the reform movement, however, is funding. Improving the quality of education is a costly endeavor. Early studies estimated that revenues would need to increase by at least 20% in order to pay for most of the proposed reforms.[3] At the same time, attention to the simultaneous pursuit of fiscal equity and educational excellence was being urged.

Encouraging action has taken place in the struggle for fiscal equity. Of the 11 reform states that I discuss in this article, four – Arkansas, Georgia, Kentucky, and Texas – enacted fundamental changes in their school finance formulas as part of their education reform packages. Six of the other seven states had enacted school finance reforms during the 1970s; most of these reforms promoted the equalization of resources among school districts. So far, equity in school finance seems to have fared well in states that are actively involved in the reform movement.

Furthermore, funding levels for programs for students with special needs have also fared well in most reform states – sometimes receiving the same percent increase as the general aid formula, sometimes receiving a higher increase.[4] Although more analysis is needed on the ways in which funding changes have affected fiscal equity, the indicators above suggest that fiscal equity has not been forgotten in the pursuit of excellence – and indeed has shared center stage with excellence reforms in several states.

Less costly school improvement programs in the reform states have also expanded, both in number and in the amount of funding set aside for them. Missouri's recent reform program exemplifies the renewed attention being paid to initiatives designed to stimulate reform at the local level. Missouri enacted a set of education excellence initiatives to be financed at a level of $75 million from a separate fund. Programs supported by Missouri's Excellence in Education Fund include business/education partnerships, extended contracts for teachers and administrators, parent participation programs, instructional improvement projects, writing programs, high-technology projects, advanced placement programs, and opportunity classes for children at risk in grades 1 through 3. All are funded through some combination of state and local sources.

Finally, the gross indicators of funding for education reform look good. Arkansas, South Carolina, and Tennessee increased the sales tax by a penny in order to finance their reform programs. California and Texas each added more than a billion dollars to education in the first year of the reform, and Florida, Georgia, Missouri, and New York increased state aid to education by larger amounts than at any time in history. Kentucky's reform bill costs more than $300 million – just less than 30% of current state aid.

Now that the U.S. has several years of experience with the new wave of education reform, however, a more detailed look at the course of school funding suggests that optimism for fiscal growth needs to be restrained. Funds for education reform are actually in short supply. Two recent studies concluded that revenues for education – even in many reform states – will do well to stay even over the next five years, after adjustments for enrollment increases and inflation.[5] In the remainder of this article I will investigate the level of revenues that various sources of school financing have produced in recent years, and I will conclude with a prognosis for the fiscal needs of public education for the rest of the Eighties.

FUNDING PATTERNS

Nationwide, school funding has reversed the declines of the early 1980s and has begun to increase moderately.[6] Expenditures per pupil have increased 15.8% in the two years since the education reform movement started in 1983. When adjusted for inflation, the increase was only 7.2% – not the 20% that most of the reform plans will cost, but still better than the real losses of the preceding three years. Federal revenues have stayed about the same in nominal terms throughout the Eighties but have dropped in real terms from $6.7 billion in 1982 to $5.8 billion in 1985 (in 1979 inflation-adjusted dollars). During this period state and local revenues used for education increased in both real and nominal terms. Adjusted for inflation, state funds rose by 5.4%, and local funds rose by 6.4%. While there is comfort in the trends these figures re-

PERSONNEL
B.Brown

"I'm sorry I lost my diploma, but I can show you my father's cancelled checks."

veal, the funding increases are modest. If education reform has helped to reverse the declining finances of the public schools, it has not opened a gushing faucet. The figures for per-pupil expenditures would be even lower had enrollments been rising during the early 1980s – as they are now beginning to do.

The individual states that have enacted comprehensive reform programs appear, at first blush, to have improved funding for education dramatically above the national averages. Tables 1 and 2 depict levels of funding and changes in funding for 11 education reform states between 1982-83 and 1985-86. Several of the changes are impressive. Arkansas increased state aid by 18.7% in the first year of its reforms, by 18.3% in the following year, and by 10.4% in the third year. In the three years since its reform program began, California increased aid by $3.2 billion – a considerable amount by any standard. New York increased state aid by $613 million between 1983-84 and 1985-86, the largest aid increase in that state's history. When it enacted its reforms, South Carolina hiked state aid by 32.4%, bumping the total state and local revenues by 22.5%. Tennessee also increased state revenues by more than 20%, and Texas combined an increase in state aid of nearly $1 billion with a local revenue increase of nearly $500 million to bring total state and local increases to 19.4%. By any reckoning, these funding changes are large.

But if we analyze these funding changes over the long term, identify the trade-offs between state and local revenue changes, and adjust for enrollment growth and inflation, we find them modest overall. Consider the following examples. When California's funding increases are adjusted for enrollment increases (now averaging 100,000 students per year) and for inflation, revenues per pupil stayed even between 1984-85 and 1985-86, the third year of reform. Inflation and enrollment growth in California will require an additional $1.5 million dollars above what the reforms produced for each of the next few years in order to maintain a steady fiscal state. In South Carolina and Texas, large one-year increases were preceded and followed by lean years; in fact, with rising enrollments in Texas, state aid per pupil in nominal terms will drop in 1985-86 and in 1986-87. The state aid increase in New York between 1983-84 and 1984-85 – the largest in the state's history – seems to be almost completely offset by a lack of increase in local revenues for that year; in fact, combined state and local revenues increased by a larger amount in the year preceding that historic rise in state revenues. Put differently, New York's educational system fared better when state aid increases were more modest. Missouri's recent large increase in state aid came after three years of very small increases, though increased education revenues from the sales tax initiative (Proposition C) boosted education funding in the two years preceding the 1985 reforms.

The analysis above is not meant to criticize the Herculean efforts to increase education funding in the reform states. Rather, my point is that, even with extra effort, school funding has not increased all that much. Enrollment increases – a new phenomenon after a

Table 1.

Level of State and Local Revenues for Public Schools, 1982-83 to 1985-86

	1982-83	1983-84	1984-85	1985-86 (est.)
		(millions of dollars)		
Arkansas				
State	509.8	605.3	716.3	790.7
Local	272.2	293.4	301.4	331.4
Total	782.0	898.7	1,017.7	1,122.1
California				
State	8,052.6	9,328.4	10,443.6	11,227.3
Local	2,675.0	2,886.0	3,289.1	3,459.9
Total	10,727.6	12,214.4	13,732.7	14,687.2
Florida				
State	1,898.9	2,122.9	2,353.0	2,575.4
Local	1,140.8	1,274.4	1,422.0	1,532.1
Total	3,039.7	3,397.3	3,775.0	4,107.5
Georgia				
State	1,367.0	1,460.0	1,630.0	1,755.0
Local	n.a.	n.a.	n.a.	n.a.
Total	n.a.	n.a.	n.a.	n.a.
Illinois				
State	2,103.2	2,236.1	2,352.9	2,697.9
Local	2,974.4	3,182.9	3,208.0	n.a.
Total	5,077.6	5,419.0	5,560.9	n.a.
Kentucky				
State	1,048.0	1,141.8	1,160.5	1,179.2
Local	279.5	314.8	359.0	409.3
Total	1,327.5	1,456.6	1,519.5	1,588.5
Missouri				
State	827.7	976.0	1,019.2	1,165.7
Local	1,058.9	1,228.2	n.a.	n.a.
Total	1,886.6	2,204.2	n.a.	n.a.
New York				
State	4,643.9	4,877.0	5,490.0	5,893.0
Local	6,459.7	7,085.0	7,130.0	7,531.9
Total	11,103.6	11,962.0	12,620.0	13,424.9
South Carolina				
State	745.9	803.8	1,064.1	1,117.3
Local	453.8	519.9	557.8	585.7
Total	1,199.7	1,323.7	1,621.9	1,703.0
Tennessee				
State	774.4	773.2	938.2	1,004.0
Local	706.8	741.7	778.8	817.7
Total	1,481.2	1,514.9	1,717.0	1,821.7
Texas				
State	3,620.0	3,734.6	4,701.8	4,851.2
Local	3,349.0	3,673.1	4,142.4	n.a.
Total	6,969.0	7,407.7	8,844.2	n.a.

Figures are not comparable across states. State revenues in Missouri include Proposition C funds. California figures exclude lottery revenues.

decade and a half of enrollment declines – will require a great many new dollars. Inflation, though modest, requires extra funding. State aid increases often can supplant local funds so that the net funding increase is modest. And large hikes in one year may not set a pattern for subsequent years. Over time, even in education reform states that have experienced the largest funding increases, these factors produce changes that are modest, that barely keep funding for the educational system from losing ground. More detailed analyses of the sources of these recent increases in funding for schools provide insight into the reasons why funding for education is unlikely to rise dramatically in the near future – even in reform states.

SOURCES OF FUNDS FOR REFORM

Federal revenues. Revenues for public schools come from federal, state, and local governments, as well as from individuals and organizations in local communities. As I mentioned above, over the past few years federal education revenues have increased slowly in nominal terms and actually dropped when adjusted for inflation. Each year Congress introduces new education bills that would increase federal funding for education, but the bills usually do not make it to floor debate. Unless some dramatic change occurs in the issues pressing Congress, large federal deficits and growing noneducation expenditures make significant increases in federal aid to education an unlikely source of major new education revenues over the next five years.

State revenues. As Tables 1 and 2 show, the states have been stalwart providers of recent increases in funding for education, and this pattern holds for the last decade and a half. States became the primary sources of education funding in part because of the school finance reforms of the 1970s. States also contributed three of every five new dollars for schools during the recession of the early 1980s.[7] Furthermore, states have been the fiscal engine that has powered the education reforms enacted since 1983.

Indeed, changes in state taxes proved to be the major source of funds for expensive education reforms – both directly, through such vehicles as sales tax increases dedicated to school reform (as in Tennessee, Arkansas, and South Carolina), and indirectly, through tax increases to balance state budgets.[8] Because of these actions, states claimed to be leaders in financing key domestic programs, including education. These politically courageous actions, coming at a time when the fervor to cut taxes and expenditures had not yet clearly waned, helped set the stage for a robust response to the funding needs of the proposed reforms.

The states that have enacted comprehensive education reforms usually raised state taxes to finance them. Five states increased the sales tax and devoted nearly all the extra revenues to education. In Arkansas, the December 1983 reform package increased the sales tax by a penny; the yield from that tax hike – $67 million for the last six months of the 1984 fiscal year – helped cover the $95.2 million increase in state aid in the first year of the reforms. In the next year, however, the extra penny brought in more than $155 million,

Table 2.

Changes in State and Local Revenues for Public Schools, 1982-83 to 1985-86

	1982-83 to 1983-84 [millions of dollars (% change)]	1983-84 to 1984-85 [millions of dollars (% change)]	1984-85 to 1985-86 [millions of dollars (% change)]
Arkansas			
State	95.2 (18.7)	111.0 (18.3)	74.4 (10.4)
Local	21.2 (7.8)	8.0 (2.7)	30.3 (18.0)
Total	116.7 (14.9)	119.0 (13.2)	104.4 (10.3)
California			
State	1,275.8 (15.8)	1,152.0 (12.0)	783.7 (7.5)
Local	211.0 (7.9)	403.1 (14.0)	170.8 (5.2)
Total	1,486.8 (13.9)	1,518.3 (12.4)	954.5 (7.0)
Florida			
State	224.0 (11.8)	230.1 (10.8)	222.4 (9.5)
Local	133.6 (11.7)	147.6 (11.6)	110.1 (7.7)
Total	357.6 (11.8)	377.7 (11.1)	332.5 (8.8)
Georgia			
State	43.0 (6.8)	170.0 (11.6)	125.0 (7.7)
Local	n.a.	n.a.	n.a.
Total	n.a.	n.a.	n.a.
Illinois			
State	132.9 (6.3)	116.8 (5.2)	345.0 (14.7)
Local	208.5 (7.0)	25.1 (0.8)	n.a.
Total	341.4 (6.7)	141.9 (2.6)	n.a.
Kentucky			
State	93.8 (9.0)	18.7 (1.6)	18.7 (1.6)
Local	35.3 (12.6)	44.2 (14.0)	50.3 (14.0)
Total	129.1 (9.7)	62.9 (4.3)	69.0 (4.5)
Missouri			
State	148.3 (17.9)	43.2 (4.4)	146.5 (14.4)
Local	169.3 (16.0)	n.a.	n.a.
Total	317.6 (16.8)	n.a.	n.a.
New York			
State	233.1 (5.0)	613.0 (12.6)	403.0 (7.3)
Local	625.3 (9.7)	45.0 (0.6)	401.9 (5.6)
Total	858.4 (7.7)	658.0 (5.5)	804.9 (6.4)
South Carolina			
State	57.9 (7.8)	260.3 (32.4)	53.2 (5.0)
Local	66.1 (14.6)	37.9 (7.3)	27.9 (5.0)
Total	124.0 (10.3)	298.2 (22.6)	81.1 (5.0)
Tennessee			
State	-1.2 (-0.2)	165.0 (21.3)	65.8 (7.0)
Local	34.9 (4.9)	37.1 (5.0)	38.9 (5.0)
Total	33.7 (2.3)	202.1 (13.3)	104.7 (6.1)
Texas			
State	114.6 (3.2)	967.2 (25.9)	149.4 (3.2)
Local	324.1 (9.7)	469.3 (12.8)	n.a.
Total	438.7 (6.3)	1,436.5 (19.4)	n.a.

while state aid for elementary and secondary education went up $110 million. South Carolina gave education the entire one-cent increase in its sales tax, estimated to yield $202 million in 1985, $227 million in 1986, and $242 million in 1987. Tennessee's one-cent sales tax increase produced about $325 million in 1985, with elementary and secondary education receiving a hike of $165 million.

To garner public support for a one-cent tax increase in 1982, Missouri promised to use half of the proceeds to roll back local property tax levies. The rest, though, provided healthy revenue increases for education, boosting state aid by 18% in 1984. However, increases in education aid from general state revenues stagnated in the two years after Proposition C. Thus the hike in the sales tax supplanted a portion of natural increases in state aid.

Finally, Texas increased the sales tax modestly (from 4% to 4.125%) and expanded its base to provide the largest new, individual revenue source ($305 million) for its multi-billion-dollar education reform. During a special session of the legislature in 1984, Texas lawmakers increased several other taxes as well (including those on motor fuels, corporate franchises, insurance companies, and on the sale or rental of motor vehicles) to raise an extra $4.8 billion over three years to improve the state's schools and highways. From these sources, $2.7 billion was allocated for education, $1.4 billion for highways, and $700 million to balance the budget.

Illinois and Kentucky also increased state tax rates to fund education reform, but on a series of smaller items. Illinois raised a number of excise taxes (a 5% tax on long-distance telephone calls and an eight-cent cigarette tax) to fund its $92.5 million reform package. Kentucky restructured the depreciation schedules for its corporate income tax and increased the business inventory and corporation license taxes to help fund its $307 million reform program.

California and Florida enacted significant modifications in various state taxes to raise the revenues needed to finance the reforms the states enacted in the summer of 1983. By making state tax codes conform to federal codes and by putting property on the tax roll when it is completed or using the new market value immediately when property changes hands, California raised an estimated $400 million that, when added to the $350 million that both houses of the state legislature had already agreed to add to education, nearly covered the $800 million first-year cost of the reforms. Florida made numerous adjustments to the way business income is taxed and to the general sales tax, in order to produce the extra $100 million it needed for education reform.

Georgia and Missouri – the two states that enacted no changes in the tax code and funded their reforms from natural revenue growth – actually delayed implementation of the reforms for at least one fiscal year. Time will tell whether available revenues a year hence will prove adequate.

Finally, three states seem to be banking heavily on lottery revenues to give education a fiscal boost. Missouri hopes that its new lottery, to begin in 1986, will produce funds to finance future costs of reform. California enacted a lottery by initiative in the fall of 1984; it began operating in October 1985. Net proceeds are expected to be approximately $400 million ($243 million for the current school year), which is about what is needed to "cover" one year of student enrollment increases – hardly a major revenue boost. Finally, the large increases in state aid in New York occurred during the year in which the lottery produced significant new revenues; but the next year, when actual lottery revenues exceeded estimates by $43 million, the general state appropriation for education was reduced by that exact amount. Furthermore, as noted above, when state aid increased in 1985, local revenues fell, and the net gain was minimal. So in the first year, lottery revenues supplanted local funds, and in the next year, lottery funds supplanted state funds.

In short, education reform states have been quite aggressive in finding new sources of revenue for public schools. They have increased tax rates, expanded tax bases, adopted lotteries, and pledged natural revenue increases for the schools. They have taken these steps at a time when tax increases are even less popular than usual, though public support seems to be available if tax increases are specifically aimed at improving the quality of public education. In the main, though, the additional revenues have given education a one- to two-year fiscal shot in the arm, after which revenues per pupil will do well to stay even in real terms. In short, while the states have creatively tapped a variety of sources to fund education reform, they have not opened wide the fiscal floodgates. At a time when government growth is limited, it seems that state dollar increases to reform and improve the education system have so far been modest.

Mike Streff

"What money-making enterprise are you majoring in?"

The states have been stalwart providers of recent increases in funding, and this pattern holds for the last decade and a half.

Local revenues. As I mentioned above, local revenues have also played an important role in education finance in recent years. After the proliferation of property tax relief policies in the late 1970s, states turned once again – in the depths of the recession of the early 1980s – to the local property tax to help finance schools. Indeed, the large property tax increases between 1980 and 1982 were viewed with alarm by those who saw them as a reversal of gains made in the previous decade. Although the property tax continues to play a formidable role in school funding, it is unlikely to provide dramatic increases through higher tax rates, except perhaps in places where the tax is significantly underused. None of the education reforms discussed above, for example, was accompanied by mandatory increases in the property tax rates of the same order of magnitude as increases in state taxes, which changed as much as

25% in some states. In Arkansas, Florida, and Texas, however, modest property tax increases were required, and in Missouri requirements for increasing local property tax rates were loosened. Nevertheless, the property tax is still an unpopular tax,[9] and efforts to increase its use, except in times of severe fiscal stress, are likely to produce a backlash.[10] Thus higher property taxes are unlikely to be a source of new revenues for the schools.

There are several other potential sources of local revenue growth, however. The first includes local option sales and income taxes. Although these would create technical, administrative, and legal problems, they nevertheless are productive avenues to pursue for increasing local education revenues. In Tennessee, for example, the sales tax provides about 40% of local school revenues. Indeed, the popularity of the sales tax at the state level usually carries over to the local level as well; when put to a vote, taxpayers often support a local sales tax. Although local sales and income taxes are not widespread today, a growing number of communities are opting for their use, and they offer the potential for generating significant revenue in such states as California and Washington, where it is virtually impossible to increase local property taxes.

Other sources of local revenues include nontax income derived from various types of entrepreneurial activities. Lionel Meno identified three major sources of revenue of this kind:[11]

- donor funds, including direct cash donations to local districts, indirect cash donations through locally created educational foundations, and donations of goods and services;
- enterprise activities, such as leasing school services and facilities or charging user fees for various school materials and activities; and
- shared or cooperative activities with community colleges, other colleges and universities, and local government agencies, including sharing buses, parks, recreational centers, and pools.

Meno conducted an extensive study of the extent, nature, and amount of revenue produced by each of these categories of activities. He concluded that a district that used every one of them could possibly increase its budget by 9%. Meno found, however, that actual dollars raised varied from $1.57 per pupil to $75.57 per pupil. The largest actual revenue yield was about an additional 2% of the nationwide average expenditure per pupil.

In another study, Richard Yong and Alan Hickrod reached similar conclusions about the revenue-raising potential of entrepreneurial fund-raising activities.[12] Although the sums actually raised are not insignificant, the fact is that they do not offer much potential for enhancing local district revenues. Furthermore, many local enterprise activities entail new, shared school governance mechanisms – an understandable requirement, but perhaps too high a price to pay for the revenues that they yield.

On the other hand, the impact of well-organized local district educational foundations needs to be measured in terms beyond the revenues they yield directly. Foundation funds can expand community involvement in the schools, raise the interest of local businesses, and strengthen school/business partnerships. Noneducators involved in such foundations often develop a renewed appreciation for local schools and realize that schools do a pretty good job, given the complexity of the tasks they face and the level of resources they have available. Such activities can rekindle local support for schools that, over time, can become support for increased local funding and a catalyst for improving the schools. Viewed in this light, the seeming rise of local educational foundations across the U.S. could have significant positive effects on school funding.

NO MAGIC or secret sources of new funds for the schools exist. Local property taxes, state revenues from a number of tax sources, and federal aid will continue to provide the bulk of financing for our schools. These revenue sources have halted their decline of three years ago and are now increasing at modest rates. If the strength of education reform has reversed fiscal decline, though, it has not been sufficient – at least, given the fiscal evidence so far – to place funding for education on a sound course of improvement.

These current conditions, coupled with demographic trends for the future, make raising the level of education funding a challenge. Student enrollments are now on the rise; thus schools will need more money just to stay even with expenditures per pupil. More classrooms will be needed to house these students – another costly outlay. The rising public school enrollments will include larger numbers and percentages of minority, limited-English-proficient, poor, and learning-disabled students.[13] All these special categories of students will require extra services to meet their educational needs. And the quality of education for the rest of the population, though better than it was a few years ago, still needs to improve.

We must continue to increase school funding. Recent evidence shows that the educational system can change quickly when public demands for better quality are stated clearly and money for reform is provided. Continuing to improve the quality of public education will require sustained funding; providing education for a growing number of ever more diverse students will require sustained funding. If the nation responds in the next five years as it has in the past three, school funding can increase, and the quality of education can improve. We really have no other options.

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Should a Million and a Half Students Be Required to Take the SAT Next Year?

by James Crouse

Most colleges could ignore their applicants' scores on the Scholastic Aptitude Test without appreciably altering the overall accuracy of their admissions decisions. The SAT is statistically redundant, Mr. Crouse claims.

BY THE TIME they graduate, nearly 1.5 million members of the high school class of 1985-86 will have taken the Scholastic Aptitude Test (SAT). Many of them will have taken the test more than once. All but a handful will take it because they wish to attend college and need to submit their scores to one of the institutions that require SAT scores for admission. Will these students have taken the test for any useful purpose?

No one knows the full costs of the SAT in both economic and human terms, but they must be enormous. The entire SAT enterprise would seem justifiable only if the use of the test resulted in some substantial benefits. The College Board and the Educational Testing Service (ETS) have claimed for decades that the SAT helps colleges make better academic decisions about which students to admit.

In the May 1985 issue of the *Harvard Educational Review*,[2] I argued that the view of the benefits of the SAT held by the College Board and ETS is not supported by the facts. My analysis raises serious questions about how colleges can continue to justify requiring their applicants to take the test, about how ETS and the College Board can continue to justify promoting its use, and about how the American public can get better information about the test's purposes and whether they are met.

PURPOSES OF THE SAT

The College Board says that SAT scores are "intended to supplement the secondary school record and other relevant information about the student in assessing competence for college work."[3] Why use SAT scores as a supplement to assess competence for college work? Because, says ETS, though "students' previous grades are the most important indicator . . . the addition of scores on good tests adds significantly to the prediction of success."[4] ETS offers a significant amount of evidence to support its case.

The predictive effectiveness of the SAT has been assessed by the College Board, by ETS, and by others almost from the beginning of its use. In addition, since 1964 the College Board's Validity Study Service has encouraged colleges to conduct their own studies of the predictive effectiveness of the SAT, and slightly more than half of the four-year colleges and universities contacted in a 1979 survey by the College Board and the American Association of Collegiate Registrars and Admissions Officers had conducted some kind of study.[5] The College Board periodically releases results from these studies, which now number more than 3,000.[6]

Other organizations conducted nationally representative surveys of high school students in 1960, 1972, and 1980 to assess the state of U.S. education, and SAT scores are in these data files or can be added to them. Because each of these surveys follows students after high school, the predictive effectiveness of the SAT for college and later life can be measured.[7]

The results of these studies show overwhelmingly that the high school record and the SAT taken together are more effective in predicting freshman grades than the high school record alone. Data from the National Longitudinal Study (NLS) of the high school

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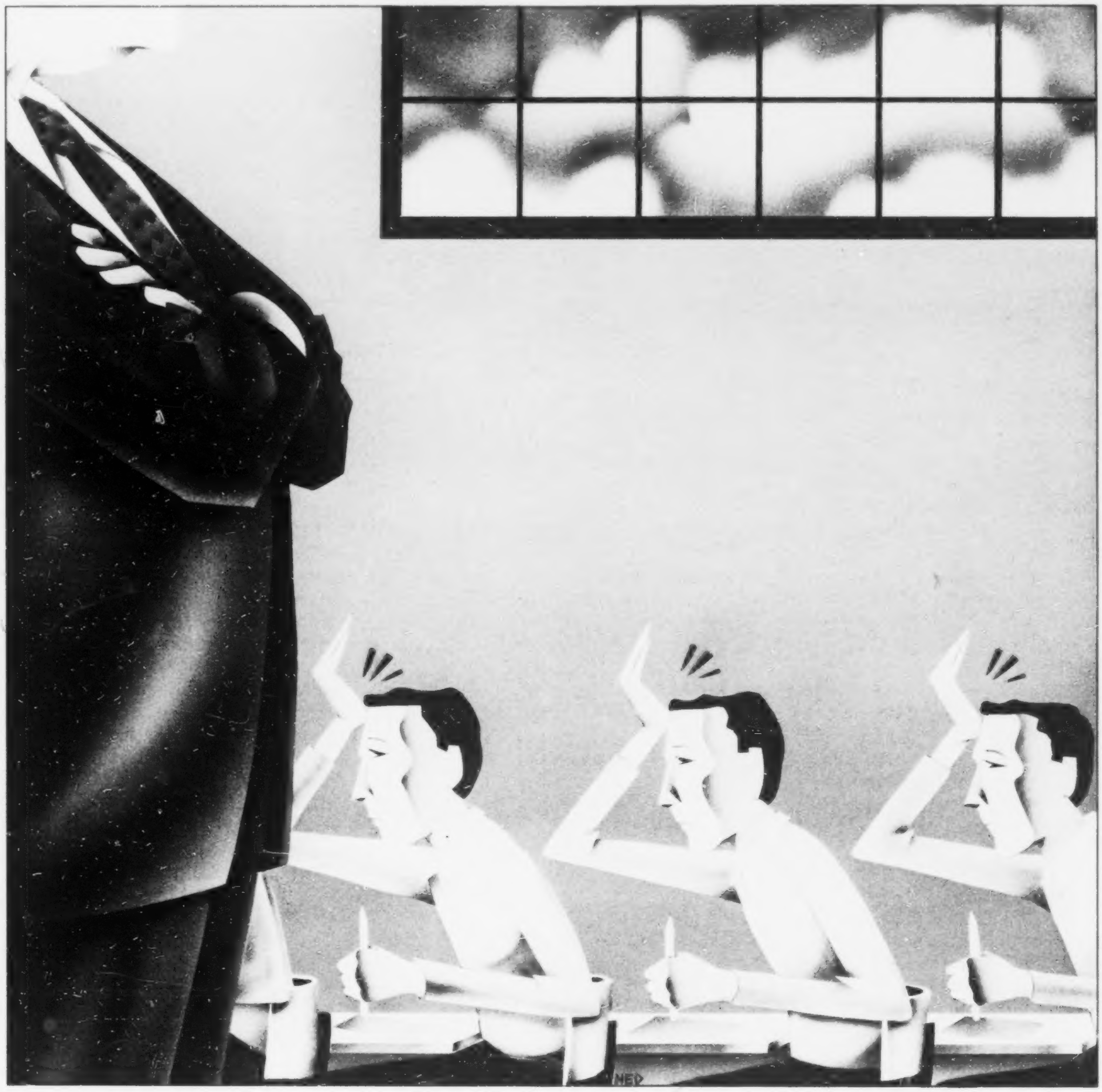

class of 1972 indicate that students with the same high school class rank whose SAT scores differ had widely differing freshman academic records (see Table 1). A student with a higher SAT score had a higher predicted freshman grade-point average (GPA), freshman percentile rank in class, and probability of graduation. That student also had a smaller chance of earning average grades lower than B or C.

At first, these results struck me as dramatic evidence of the predictive effectiveness of the SAT. They seem to affirm the claims of the College Board and ETS and to refute critics who argue that the SAT adds little to predictions of college success based solely on the high school record.[8] But in fact these results, with which ETS and the College Board have justified colleges' use of the SAT for nearly 60 years, tell us almost nothing about the usefulness of the test to colleges.

Why? The simple reason is that prediction of freshman grades is not the ultimate goal of the admissions process. The purpose of college admissions is to make admissions decisions. The SAT can be useful to college admissions officers only if it helps them admit applicants whom they would reject using only high school records and helps them reject applicants whom they would admit using only high school records. If colleges admitted and rejected the same students, whether or not they used the SAT, the test would be redundant and could add nothing to actual college admissions decisions. This is in fact nearly the case.

REDUNDANCY OF THE SAT

We must assume that, if colleges predicted their applicants' freshman grades (for purposes of admission) using high school rank alone, some pre-

Illustration by Ned Shaw

dictions would be different from those made using high school rank together with SAT scores. How different would these predictions be? Would the difference be large enough to influence any college's actual admissions decisions?

When the yardstick used for success is college completion, the predictive value of the SAT is even less impressive.

To find out, let us look at the distribution of predicted freshman grades using high school rank alone to see how much it differs from the distribution of predicted freshman grades using both high school rank and SAT scores. I analyzed a sample of 2,781 high school seniors in the NLS survey who applied to four-year colleges as their first choice and for whom SAT scores, high school rank, and selectivity data for their first-choice colleges were available. I then predicted freshman grades for these applicants at their first-choice colleges in two ways. First, I used high school class rank alone; second, I used a combination of high school class rank and SAT scores. Table 2 presents these two distributions of predicted freshman GPAs and their cross-tabulation.

Table 2 is a composite of predicted grades for applicants at many different colleges. The reader should not fall into the trap of thinking that the distributions and their cross-tabulation in Table 2 are therefore unlike those of applicants to any individual college. In fact, I have examined versions of Table 2 for many different individual colleges, and these versions never differ in any important ways from Table 2. Consequently, I combined all colleges in the NLS to describe the applicant pool at the typical American college.

The distributions of these predicted freshman grades have some important consequences for understanding the usefulness of the SAT in making decisions about college admissions. Suppose that the typical college in the NLS decided to accept applicants whose predicted freshman GPA was above 2.5 and to reject those whose predicted freshman GPA was 2.5 or below. When we compare the effects of basing these predictions either on high school record alone or on high school rank plus SAT score, we can see that 74.2% of the applicants would be accepted and 16.6% rejected under either policy. Identical admissions decisions would be made on a total of 90.8% of the applicants. Therefore, only 9.2% of applicants to college would be accepted using one plan and rejected using the other.

Note that this finding does not depend on where the college sets the cutoff point for admissions. Setting the cutoff point at 2.0 or 3.0 will change the percentages somewhat but will still demonstrate that there is little to choose between a high-school-rank policy and a high-school-rank-plus-SAT policy. This finding is virtually guaranteed by the fact that the two distributions of predicted freshman grades correlate .881.

Thus colleges make identical admissions decisions, either to admit or reject, on more than 90% of their applicants whether they use high school grades alone or high school grades plus the SAT. The SAT, therefore, has little impact on who is in colleges' freshman classes and who is not. It is, in effect, statistically redundant. These observations suggest that, since the SAT has very little effect on who is in a college's freshman class, the SAT will also have very little effect on any college outcome.

EFFECT ON ADMISSIONS

College officials mean several different things when they say that they want to maximize their correct admissions decisions. On the one hand, they want to admit students who will make satisfactory freshman grades and go on to earn degrees and to reject those who will not finish their programs. But college admissions officers also care about the kinds of mistakes they make; they want to minimize the number of potentially unsuccessful applicants they admit and minimize the rejection of applicants who would have succeeded had they been admitted.

It is also important to note that officials from different colleges value different outcomes of admissions decisions, just as they place different values on various admissions criteria. Therefore, we should employ a variety of standards in evaluating the correctness of admissions decisions. However, since an admissions policy that uses high school rank alone makes the same admissions decisions for 90% of the applicants as a policy that also includes the SAT (i.e., the SAT is statistically redundant), the differences between the two policies should be minimal.

Correct admissions forecasts increase acceptances of applicants who earn satisfactory freshman grades and eventually graduate. Correct forecasts also increase the rejection of applicants who would earn unsatisfactory freshman grades and eventually drop out. Given a college that requires a 2.5 predicted freshman GPA for admission and a similar criterion of success for the actual freshman GPA, my study of the NLS data shows that such a college will make only 2.7 more correct admissions forecasts per hundred applicants when it uses the SAT in addition to high school rank than when it uses high school rank alone.[9]

The results are similar when a 3.0 predicted freshman GPA is required for admission. With this higher admissions standard, basing predictions on both high school rank and SAT improves correct admissions forecasts by only 2.2 per hundred.

When the yardstick used for success is college completion, the predictive value of the SAT is even less impressive. Colleges now make only trivial improvements in their ability to forecast college completion correctly when they use the SAT and high school rank together instead of high school rank alone. Indeed, correct forecasts increase by only 0.1 per hundred when using the SAT and high school rank in conjunction with a 2.5 predicted GPA admissions standard and by only 0.2 per hundred when the admissions standard is raised to a predicted GPA of 3.0.

Both rank-alone and rank-plus-SAT admissions policies decrease the number of false positives (acceptances of students who will fail) and of false negatives (rejections of students who will succeed) below the level of chance. But the added predictive value of the SAT over high school rank alone in the NLS data is never more than 1.3 fewer errors per hundred admissions decisions.

In all, the additional correct decisions and the reductions in errors from using both the SAT and high school rank rarely exceed two to three decisions per hundred. This is because the SAT has little effect on who is in a college's freshman class. The major difference, therefore, between the two policies depends on the relatively few applicants for whom the two policies lead to different admissions decisions. This difference is always small.

With a 2.5 predicted freshman GPA as an admissions standard, the rank-plus-SAT policy admits an additional 1.3% of applicants who would be successful, and the high-school-rank policy admits an additional 1.4% who would be successful. The comparable values for a predicted 3.0 admissions standard are 6.3% for the rank-plus-SAT policy and 4.6% for the high-school-rank policy.

Colleges are also concerned with improving the academic quality of their student bodies and increasing the number of years of higher education that their students complete. However, they cannot expect to achieve much improvement in these areas from adding the SAT to an admissions policy that includes high school rank.

For example, if a college had an applicant pool with SAT scores and high school ranks comparable to those in the NLS survey and if the college admitted applicants randomly or admitted them all, the result would be freshman grades averaging 2.83 and years of education averaging 15.82. Using a high-school-rank admissions policy with a predicted freshman GPA of 2.5 as an admissions standard increases the freshman grades to an average of 2.91 and the years of education completed to 15.92; a rank-plus-SAT policy increases these figures to 2.93 and 15.93 respectively. The

TABLE 1.

SAT Scores and High School Class Rank as Predictors of College Outcomes

Probability of Average Grades of C or Better

Class Rank %	SAT Total Score 500	700	900	1,100	1,300	1,500
10	.31	.44	.57	.70	.80	.88
30	.43	.57	.69	.80	.88	.94
50	.56	.69	.80	.88	.93	.97
70	.69	.80	.88	.93	.97	.99
90	.79	.88	.93	.97	.98	.99

Percentile Rank in Freshman Class

Class Rank %	SAT Total Score 500	700	900	1,100	1,300	1,500
10	5	8	14	21	31	42
30	8	13	21	31	42	53
50	13	21	30	41	53	65
70	21	30	41	53	64	75
90	30	41	52	64	75	83

Probability of Graduation

Class Rank %	SAT Total Score 500	700	900	1,100	1,300	1,500
10	.42	.48	.53	.58	.64	.69
30	.49	.54	.59	.65	.70	.75
50	.55	.60	.66	.71	.76	.81
70	.61	.67	.72	.77	.82	.88
90	.68	.73	.78	.84	.89	.94

TABLE 2.

Cross-Tabulation of Predicted Freshman Grade-Point Averages of 2,781 NLS High School Seniors at the College They Applied to as Their First Choice

Freshman Grade-Point Average Predicted From High School Rank	Freshman Grade-Point Average Predicted from High School Rank and SAT 1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	N
1.9		3	1	6	2	3	1															16
2.0	1	1	4	6	4	6	2											N = 81				24
2.1			2	5	9	8	7	11	3			1						2.9%				46
2.2				3	6	10	25	14	11	7	2	1										79
2.3		N = 463			4	11	18	19	17	9	4	1										83
2.4		16.6%			2	5	21	22	40	27	7	2	2									128
2.5				1		1	7	23	31	44	43	13	5									168
2.6					1	2	6	12	26	37	46	40	13	5								188
2.7								6	19	21	54	58	42	21	8	1			N = 2,062			230
2.8								1	8	19	36	57	72	65	23	3	3		74.2%			287
2.9				N = 175					2	11	29	64	83	98	60	31	8	4				390
3.0				6.3%					1	3	9	19	64	124	126	92	51	11	1			501
3.1												12	23	43	104	153	144	93	31	12		615
3.2													1	1	1	3	6	5	5	2	2	26
N	1	4	7	21	28	46	87	108	158	178	230	268	305	357	322	283	212	113	37	14	2	2,781

A policy using high school rank and SAT scores will make predictions that are very similar to a policy using high school rank alone.

gain from adding the SAT is, therefore, an increase in average freshman grades of only .02 on a four-point scale and an increase in average years of educational attainment of only .01 years.

The advantages of using the SAT are slightly greater with a 3.0 admissions standard. Average freshman grades increase by .03 and average years of education by .05.[10]

THE VALIDITY STUDY SERVICE

In 1964 the College Board established the Validity Study Service (VSS) to help member colleges perform their own validity studies. In addition to such sources of national data as the NLS, summaries of VSS studies done for individual colleges are a valuable source of information about the validity of the SAT.

The College Board does not release VSS data on individual colleges or individual students. But it does make available summary information from all participating colleges, as well as information on subsamples of colleges.

If my argument about the predictive usefulness of the SAT is correct, the VSS data should also demonstrate that an admissions policy based on high school rank plus the SAT should predict freshman GPAs that correlate highly with those predicted by rank alone. In fact, these correlations are quite high: .868 for the average college that took part in the VSS between 1976 and 1980, .801 for the most selective colleges, and .840 for the least selective colleges. The correlations drawn from the VSS data are not significantly different from the correlation of .881 for applicants in the NLS data.

These figures strongly support my general conclusion that, when admissions are based on predicted freshman grades, a policy using high school rank and SAT scores will make predictions that are very similar to a policy using high school rank alone. Thus, as I argued above, the SAT will have little impact on who is in a college's freshman class, and it is, therefore, statistically redundant.

Using the VSS data, the average college could expect to increase freshman grades through a rank-plus-SAT admissions policy by a maximum of only .15 points on a four-point scale. In order to achieve this .15 gain, the college must admit only 20% of its applicants. Using a more realistic selection ratio of 80%, the mean gain in average freshman grades would be between .02 and .03, virtually identical to the range I estimated using the NLS data. The results are similar for the most and least selective colleges.

Recently, ETS has reported an SAT coefficient that is 25% larger than the one I derived from the NLS survey.[11] It comes from 191 colleges that used SAT scores and high school GPAs in validity studies for entering classes from 1977 to 1981. Despite this larger effect of the SAT, these new data from ETS confirm every aspect of my analysis.

For example, the new ETS data demonstrate that an admissions policy based on high school grades plus SAT scores generates predicted freshman GPAs that correlate highly with those based on high school grades alone. The correlation in the new ETS data is .881, virtually identical to the values I presented above for the NLS and for other VSS data. So the SAT is also statistically redundant in the new ETS validity data.

Moreover, the estimated increment in average freshman grades of the accepted applicants at colleges using the SAT is also small. The new ETS data show that the typical college from these 191 colleges improves the average freshman grades of its accepted students by only .022 on a four-point scale if it uses a rank-plus-SAT admissions policy rather than rank alone. Once again, this value is within the .02 to .03 range that I estimated from other VSS data and from the NLS.

ETS is fond of pointing out that the size of the relationship between SAT scores and freshman grades is often dramatically underestimated when the range of SAT scores is restricted.[12] In the extreme case, for example, if a college enrolls students whose SAT scores are all the same, SAT scores can show no relationship to freshman grades. To get around this problem, ETS often corrects for restricted range in its estimates of the validity of the SAT.

Recently, ETS searched its VSS records for the College Board and found 21 colleges in which the distributions of SAT scores and high school rank are virtually identical to those of the total SAT-taking population. In these carefully chosen colleges with unrestricted ranges for high school records and SAT scores, the optimal equation for predicting freshman grades using high school record and SAT together is better than any other equation I have ever seen. The multiple correlation is .65, and the unstandardized coefficient for the SAT is 10% larger than the one for the new ETS data I reported above. If any data should show large benefits of the SAT, it should definitely be these.

Yet they do not. Robert Cameron, executive director for research and development at the College Board, gave me these data to analyze. I find no less statistical redundancy in these data than in any others for predicting freshman grades using the rank-plus-SAT admissions policy or the rank-alone policy. The correlation is .889, which is nearly identical to the .881 for the new ETS data. Furthermore, the gains in freshman grades of students selected by the rank-plus-SAT policy average only .03 higher on a four-point scale – again, virtually the same gains I reported above for the NLS and the VSS.

For all practical purposes, then, all these data confirm my conclusions. An admissions policy based on a combination of applicants' high school records and SAT scores admits and rejects nearly the same people as one based on high school records alone. Thus colleges that admit applicants according to their academic eligibility now benefit little from adding the SAT to their admissions requirements.

DEFENDING THE SAT

From a practical viewpoint, most colleges could ignore their applicants' SAT scores without appreciably altering the overall accuracy of their admissions decisions. This is contrary to the advice offered to colleges by the College Board and ETS that they should use their applicants' SAT score reports to make better academic selection decisions from their pools of applicants. The College Board and ETS might argue that, even though most colleges could ignore their applicants' SAT scores without appreciably altering their admissions outcomes, they would nonetheless sacrifice small but worthwhile gains in student quality.

If there were no costs involved in using the SAT, it could reasonably be argued that a massive admissions testing program is a good thing because it harms no one yet helps colleges make slightly better decisions. But the SAT has substantial costs that, in my opinion, outweigh by far the minimal help that colleges derive from using it.

Many of these costs are obvious. High school students who plan to attend college spend at least $30 taking the SAT one or more times and the Preliminary Scholastic Aptitude Test once. Many students also pay as much as $600 for commercial coaching aimed at improving their test scores. More important, many high schools use valuable instructional time on courses that prepare students for the SAT and other similar tests. In these courses, students hurriedly memorize long lists of vocabulary words and practice answering SAT-type questions from sample tests. This time and effort might be better spent learning academic subjects.

But the largest costs of the SAT may not be the monetary ones. These costs involve the anxiety of high school students and their parents, who nervously anticipate both the test itself and the arrival of the scores. A 1977 survey prepared for the College Board and designed to monitor the attitudes and reactions of students who take the SAT shows that nearly one-fifth of the students are "very nervous" about taking the SAT, while another 56% are "a little nervous."[13] Applying these figures to the entire population of students who take the SAT means that more than three-quarters of a million students faced the SAT with some trepidation in 1982-83.

Defenders of the SAT often argue that college-bound students can use their SAT scores to help them select a college appropriate for their level of ability. ETS encourages students to use their score reports in this way. No doubt most students do want to apply to colleges where they have a reasonable chance of being admitted and of doing satisfactory work. Students seldom apply to Ivy League schools, for example, unless they have good grades and high SAT scores. This kind of self-selection also seems to take place at other colleges.

VOCATIONAL HIGH SCHOOL
NUCLEAR MEDICINE
RADIOLOGY
GENE SPLICING

"Whatever became of auto repair and bookkeeping?"

However, neither the College Board nor ETS has ever tried to find out how prospective applicants actually use their SAT score reports. They have not tried, for example, to estimate the improvement in preselection of academically appropriate colleges that could be attributed to students' use of their SAT scores – that is, how much more accurate their preselections would be than if they used only their high school grades. In fact, the 1977 survey of student attitudes showed that "the majority of students think that one's performance on the SAT has little to do with how well one will do in college."[14]

Defenders of the SAT claim that the test has helped to guarantee equal opportunity. According to ETS,

> selective admission to higher education was far more a matter of class and economic status prior to the use of national admissions tests than it has been since. The introduction of tests resulted in a substantial increase in opportunities for educational advancement of low-income students by providing a credible demonstration that many such students from schools without reputations for educational excellence could succeed in the demanding academic programs of the most selective institutions.[15]

This version of the history of education is vastly oversimplified. To begin with, many elite colleges have *always* used admissions tests that allowed applicants from "schools without reputations for educational excellence" to demonstrate their competence. It is true that these examinations measured mastery of traditional academic subjects, including ancient languages, and that they therefore put students who had not studied these subjects at an overwhelming disadvantage. And this remained the case when, for reasons of administrative convenience, the leading selective colleges in the U.S. banded together early in this century to establish a single set of admissions tests.

It is also true that the SAT was introduced in 1926 to help selective colleges identify students who did poorly on existing achievement tests because of their poor academic preparation but who also showed promise of doing good academic work if admitted to a good college. However, ETS has never tried to determine whether the SAT has achieved this objective. ETS has not, in other words, tried to determine whether students from secondary schools "without a reputation for educational excellence" are at a greater advantage when taking the SAT than they are when taking achievement tests.

Colleges that admit applicants according to their academic eligibility now benefit little from adding the SAT, as well.

But even if the SAT *has* reduced the handicap associated with coming from an obscure school, it hardly follows that the SAT has reduced the handicap associated with coming from a poor family. Just as predominantly upper-middle-class schools usually enroll a minority of students from the working class, so too predominantly working-class high schools usually enroll a minority of upper-middle-class students. Altering college admissions policies to admit more students from less well-known high schools may simply create opportunities for such upper-middle-class students living in less-privileged communities. Such a policy could increase rather than reduce the strength of the association between socioeconomic background and college admission.

It is tempting to try to resolve these uncertainties with historical evidence. Robert Mare, for example, has examined the impact of socioeconomic background on whether U.S. men who finished high school between about 1925 and 1969 went to college.[16] Using data from the 1973 replication of the Occupational Changes in a Generation survey, Mare showed that the impact of socioeconomic background on college entrance actually *increased* during these years. This is not to say that colleges grew more exclusive. On the contrary, college students became far more socially and economically heterogeneous.

But the democratization of higher education was neither as rapid nor as complete as the democratization of secondary education. Among those who finished high school, therefore, socioeconomic background became a somewhat better predictor of college attendance over the period Mare studied.

It would, however, be a mistake to rely on evidence of this kind to assess the impact of tests such as the SAT. Since virtually all high school graduates have always been able to get into *some* college regardless of their SAT scores, high school record, or other factors, the introduction of the SAT is most likely to affect *where* students go to college rather than *whether* they go. I know of no evidence regarding changes in the social and economic composition of the student population at highly selective colleges since they began relying on the SAT. Even if I had such data, I suspect that other factors, such as changes in the ratio of college costs to median family income, changes in the availability of college scholarships and loans, and, perhaps most important, changes in the pattern of recruiting activity at elite colleges, have affected the composition of the student bodies at these colleges more than the SAT has.

Proponents of the SAT often defend it by pointing out the problems with the obvious alternatives to it. Eliminating all external standardized testing, for example, in favor of dependence on applicants' high school records alone might tempt high schools to lower their grading standards. According to this argument, if a high school is under pressure from parents to place its graduates in selective colleges and if the school knows that such admissions depend on the grades it gives students, the school may be tempted to give higher grades. And if one school lowers standards, then others will feel compelled to follow suit in order to maintain their competitive position.

I maintain, however, that colleges can minimize this problem either by paying more attention to class rank or by demanding that high schools supply grade distributions for their entire graduating classes. Nevertheless, an external examining system may allow colleges to compensate more fully for differences in high school grading standards. But it does not follow that such an examining system ought to include the SAT.

Defenders of the SAT point out that replacing it with conventional achievement tests in the subject areas of the secondary school curriculum could lead the U.S. to a system not unlike the British O-level and A-level exams and thus encourage a higher degree of curricular uniformity in the high schools than now exists. According to this argument, such a system might not only reduce the variety in students' choice of subjects but also limit access to higher education for poor and minority students who might not have chosen early in their schooling to follow a precollegiate curriculum.

Certainly each of these arguments needs to be carefully evaluated before we can decide whether the SAT is, on balance, a good thing. My argument is only that the use colleges make of their applicants' SAT score reports does not now help them improve the accuracy of their admissions decisions in terms of the academic performance or graduation rates of the students they admit. Thus, if the College Board is to keep urging its member colleges to require applicants to submit SAT scores, it should do so for reasons other than the predictive value of the test. If other reasons for giving the SAT exist, such as helping students make better decisions or giving students a chance to be measured outside their high schools, the College Board owes it to all concerned to do more than merely offer these reasons. It should also demonstrate why the reasons are valid.

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1. The author wishes to thank Karl Alexander, Albert Beaton, Carol Blumberg, Norman Bowie, George Brabner, Marvin Brams, Ken Eckhardt, Art Hoerl, Saul Hoffman, Christopher Jencks, Arthur Jensen, Robert Linn, Victor Martuza, Samuel Messick, Lou Mosberg, Peter Mueser, Michael Olneck, David Owen, Leonard Ramist, Dale Trusheim, and other participants in the ETS seminar for their criticisms of early drafts.

2. James Crouse, "Does the SAT Help Colleges Make Better Selection Decisions?," *Harvard Educational Review*, May 1985, pp. 195-219. The August 1985 issue of the same journal carried a response from the president of the College Board, George Hanford, "Yes, the SAT Does Help Colleges," pp. 324-31. My response to Hanford appeared in the November 1985 issue.

3. College Board, *Taking the SAT: A Guide to the Scholastic Aptitude Test and the Test of Standard Written English* (New York: College Entrance Examination Board, 1978), p. 48.

4. Educational Testing Service, *Test Use and Validity: A Response to Charges in the Nader/Nairn Report on ETS* (Princeton, N.J.: ETS, 1980), p. 5.

5. *Undergraduate Admissions: The Realities of Institutional Policies, Practices, and Procedures* (New York: College Entrance Examination Board, 1980), p. 14.

6. See, for example, Susan F. Ford and Sandy Campos, *Summary of Validity Data from the Admissions Testing Program Validity Study Service* (Princeton, N.J.: College Board, 1977); and *Test Use and Validity*. . . , p. 5.

7. For information about the Project Talent Survey, conducted initially in 1960, see John C. Flanagan et al., *The American High-School Student* (Pittsburgh: University of Pittsburgh Press, 1964); for information about the National Longitudinal Study, conducted initially in 1970, see R. Paul Moore, *National Longitudinal Study Base Year, First, Second, and Third Follow-Up Data File Users Manual* (Research Triangle, N.C.: Research Triangle Institute, 1978); and for information about the 1980-82 High School and Beyond Survey, see *High School and Beyond 1980 Cohort First Follow-Up (1982) Data File User's Manual* (Washington, D.C.: National Center for Education Statistics, 1983).

8. See, for example, Warner V. Slack and Douglas Porter, "The Scholastic Aptitude Test: A Critical Appraisal," *Harvard Educational Review*, May 1980, pp. 154-75; and Allan Nairn et al., *The Reign of ETS: The Corporation That Makes Up Minds* (Washington, D.C.: Ralph Nader, 1980).

9. This amounts to a *proportional* increase of 29.3% more correct admissions decisions. Nonetheless, I doubt that most colleges would notice such a small actual increase, no matter what the proportional improvement. In my judgment, the problem with proportional improvements is that they can seem large just because the base from which the improvement is calculated is small. ETS often uses proportional improvements in response to its critics who point out that actual improvements in predictions are small. See, for example, Rex Jackson, "The Scholastic Aptitude Test: A Response to Slack and Porter's 'Critical Appraisal,' " *Harvard Educational Review*, November 1980, pp. 382-91. Indeed, ETS has accused others of denigrating the usefulness of the SAT by failing to stress proportional improvements. See Warren Willingham and Leonard Ramist, "The SAT Debate: Do Trusheim and Crouse Add Useful Information?," *Phi Delta Kappan*, November 1982, pp. 207-8. Yet I have never seen a discussion from ETS about whether proportional improvements give a misleading picture of the importance of absolute gains from using the SAT.

10. The differences in the two admissions policies depend on the small number of students who are treated differently when one admissions policy is used instead of the other. Thus, with the lower admissions standard, 2.9% of all applicants are admitted with the rank-plus-SAT policy who would not be admitted with the rank-only policy; 5.4% of applicants are admitted with the high-school-rank policy who would not have been admitted with the rank-plus-SAT policy. The average freshman grades of these two groups differ by only .14 points (2.60 - 2.46) on a four-point scale. Their average years of education differ by only .07 years (15.55 - 15.48). The differences are likewise small when the higher standard is used.

11. Thomas F. Donlon, ed., *The College Board Technical Handbook for the Scholastic Aptitude Test and Achievement Tests* (New York: College Entrance Examination Board, 1984), fn. on p. 146. Actually, the regression coefficient value presented there is incorrect. The correct value is the cited value divided by 100.

12. Ibid., pp. 144-46.

13. *SAT Monitor Program* (Princeton, N.J.: Response Analysis Corporation, July 1978), p. 22.

14. Ibid., p. 37.

15. *Test Scores and Family Income: A Response to Charges in the Nader/Nairn Report on ETS* (Princeton, N.J.: ETS, 1980), p. 10.

16. Robert Mare, "Change and Stability in Educational Stratification," *American Sociological Review*, vol. 46, 1981, pp. 72-87. K

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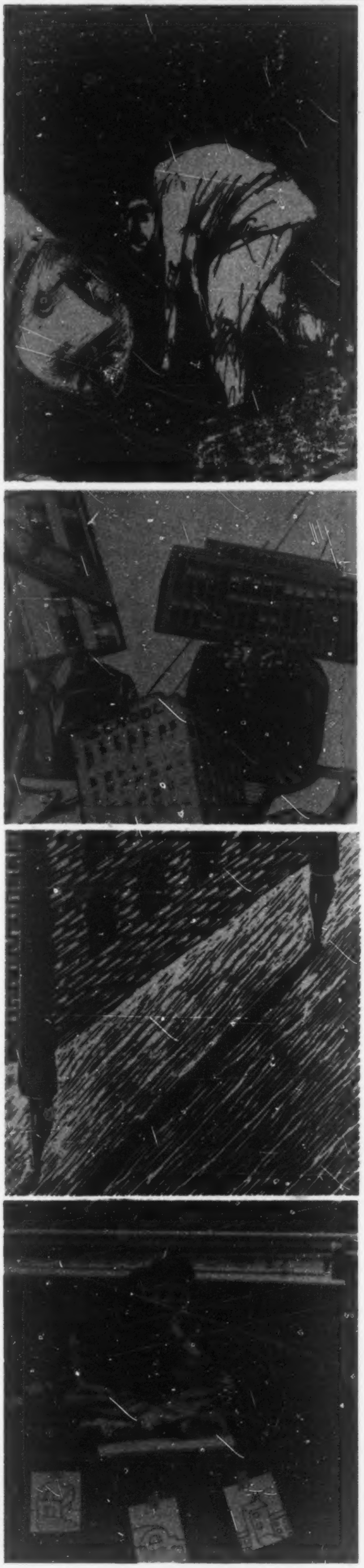
KAPPAN

The Changing Face Of Teachers

Kottkamp · Provenzo · Cohn
Dan C. Lortie

State-Sponsored School Improvement

— A Special Section



Phi Delta April 1986 • Volume 67 • Number 8

KAPPAN

FEATURES

559 **Stability and Change in a Profession: Two Decades of Teacher Attitudes, 1964-1984,** *by Robert B. Kottkamp, Eugene F. Provenzo, Jr., and Marilyn M. Cohn*

568 **Teacher Status in Dade County: A Case of Structural Strain?,** *by Dan C. Lortie*

576 **Well Below His Ability,** *by James A. Mecklenburger*

State-Sponsored School Improvement: A Special Section

578 **State Initiatives Can Foster School Improvement,** *by Beverly Anderson and Allan Odden*

582 **How Successful State Education Improvement Programs Work,** *by Allan Odden and Beverly Anderson*

586 **State-Sponsored Schoolwide Improvement Programs: What's Going On in the Schools?,** *by Eleanor Farrar and Patricia Flakus-Mosqueda*

590 **How State Instructional Improvement Programs Affect Teachers and Principals,** *by Alan Davis and Allan Odden*

594 **Improving Schools: The State Role,** *by Susan Fuhrman, Eugene Huddle, and Jane Armstrong*

597 **Chapter 2: For Better or Worse?,** *by Anne T. Henderson*

602 **Writing for Publication: Playing to Win,** *by Kenneth T. Henson*

605 **An Alternative Form of Collective Bargaining,** *by Patricia Smith and Russell Baker*

607 **A Letter from England: Professionalism and Education,** *by Richard de Zoysa*

DEPARTMENTS

554 **THE EDITOR'S PAGE,** Getting to Bedrock

555 **WASHINGTON REPORT,** *by Anne C. Lewis*

557 **STATELINE,** *by Chris Pipho*

609 **PAR,** Student Promotion and Retention, *by Monica Overman*

613 **DE JURE,** Establishment Clause Case Reveals Flaws in the Court System, *by Thomas J. Flygare*

614 **PROTOTYPES,** Do Schools Discipline Students Too Much?, *by Robert E. Rubinstein*

615 **BOOKS,** *Laurence D. Brown*

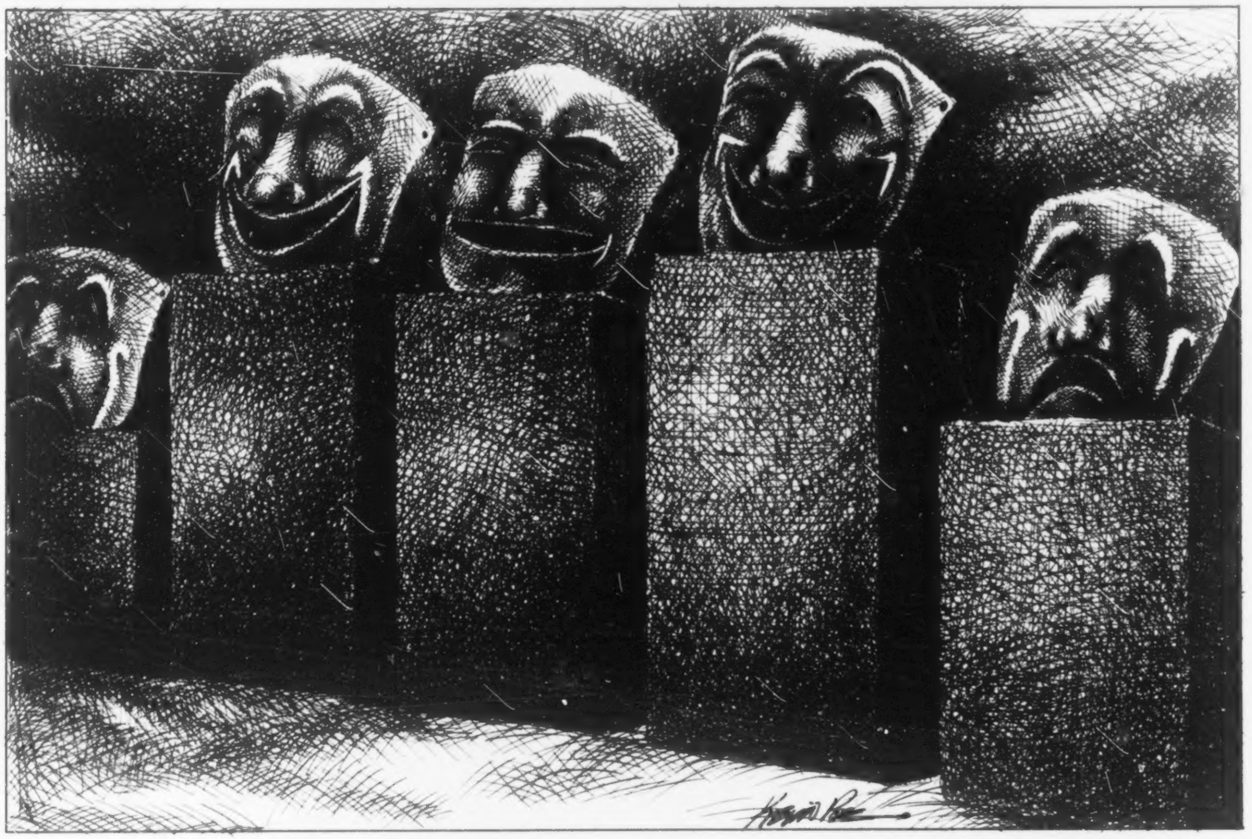
620 **NEWSNOTES**

623 **BACKTALK**

Cover Illustration: Dave Cutler

Stability and Change In a Profession:
Two Decades of Teacher Attitudes, 1964-1984

by Robert B. Kottkamp, Eugene F. Provenzo, Jr., and Marilyn M. Cohn



Dan Lortie's 1964 study, *Schoolteacher*, provided a valuable landmark for subsequent examination of the teaching profession. Now three researchers have replicated Mr. Lortie's work and provided us with an important update on the views of teachers.

IN THIS ERA of intense public concern with education and of pressure for education reform, the viewpoints of classroom teachers have

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Illustration by Kevin Pope

too often been ignored. When teacher opinions *have* been surveyed, the reports of those surveys have failed to provide a historical perspective on the views of teachers.

Because it presents data on stability and change in teacher attitudes over the 20-year period from 1964 to 1984, this article provides the previously missing historical perspective. Our observations spring from questionnaires completed by more than 6,500 Dade County (Florida) teachers in 1964 and more than 2,700 Dade County teachers in 1984, from intensive interviews with approximately 100 of the teachers in 1984, and from our analysis of the major forces that have affected teachers and their work over the past 20 years.

One aim of our study was to understand how major social forces are related to shifts in teacher attitudes and orientations toward work. This article, which is the first report of our study, contains only the frequency distributions of responses to survey questions asked of Dade County teachers in 1964 and again in 1984. As such, it provides a purely descriptive analysis of historical shifts in teacher attitudes. The historical and interview data, which are only just beginning to be analyzed, should provide a rich explanatory base for some of the changes we describe here. We believe it is important to present the following data at this time because of the questions they raise about the current debate on education reform.

The baseline survey data were collected in 1964 from Dade County public school teachers by Dan Lortie for his seminal book, *Schoolteacher*.[1] Despite enrollment pressures caused by the "baby boom," 1964 was a year of relative calm in U.S. education. The Russians had put Sputnik I into orbit seven years earlier; the Vietnam war, the women's movement, the back-to-basics movement, and accountability would not have major effects on the schools until some years later. In Dade County, Lortie's survey also predated the major movement for unionization, the first teacher strike, the implementation of desegregation plans, and several of the waves of immigrants from Cuba, South America, and the Caribbean.

Lortie chose Dade County as the site for his research in part because the countywide school system provided a rich diversity of community and school types – and in part because the Miami area was populated by persons born, and presumably reared, in all sections of the U.S. Lacking the resources to gather a national sample, Lortie reasoned that Dade County was a better-than-average setting for ascertaining the attitudes of teachers with varying regional and cultural origins. His data were collected on a single day and represented virtually the entire Dade County teaching population, minus those who were absent from school (N=6,539).[2]

The 1984 survey data were collected from teachers in all 251 Dade County schools. We drew a 40% stratified random sample of classroom teachers from each school. (The sample was stratified by school to allow us to examine issues at the school level.) Principals and union stewards were asked to encourage teachers to return the questionnaires, which were distributed through the school mail system. Follow-up efforts included mailings and phone calls to schools and homes. These procedures yielded a 64% overall response rate (N=2,718).

COMPARING THE STUDIES

During the 20 years that elapsed between Lortie's study and ours, the teaching profession changed demographically. In addition to looking at these demographic changes, we will examine stability and change in teacher attitudes and views on several important educational issues. Finally, we will examine the relationship between the empirical findings about transitions in the profession and the recent critiques of teaching and proposed reforms put forth by the various national commissions and task forces.

TABLE 1.
Age of Dade County Teachers

	1964 %	1984 %
20-29	30.2	10.7
30-39	30.7	35.2
40-49	22.0	27.4
50-59	17.0	20.2
60 or over	.2	6.5

DEMOGRAPHIC CHANGES

Demographically, the teaching force of 1984 differs from that of 1964. Teachers are older and more experienced today than in the past. In 1964 only 39% of Dade County teachers were over 40 years of age, and only 43% had more than 10 years of total teaching experience. Today, 54% of the teaching force is 40 or older, and 67% of teachers have taught for more than 10 years (see Tables 1 and 2).

Teachers also have more formal education today. In 1964 only 25% of the teaching force possessed at least a master's degree; 20 years later 58% had completed that much schooling (Table 3).

Finally, the ethnic composition of the teaching force has changed considerably (Table 4). In his 1964 study Lortie used only three categories: White, Negro, and Other. In Dade County, the percentage of teachers who are white has declined from 83% to 59% since 1964, the percentage who are black has grown from 17% to 25%, and a totally new Hispanic segment (16% of the total group) appeared in the 1984 survey.

Although their effects cannot be isolated, numerous social forces have led to these changes in the demographic characteristics of teachers. Among the social forces are: a declining birthrate, which resulted in less demand for new

TABLE 2.
Teaching Experience of Dade County Teachers

	Years in Dade County Public Schools		Total Years Teaching	
	1964 %	1984 %	1964 %	1984 %
1 year or less	14.4	7.0	10.5	2.5
2-5 years	31.7	18.2	23.3	11.8
6-10 years	26.4	19.1	23.2	18.5
11-15 years	13.9	22.3	16.2	22.5
16-20 years	6.1	16.3	9.7	18.9
21-25 years	3.1	10.1	7.5	12.4
26 years or more	4.4	7.1	9.5	13.4

(i.e., young) teachers; stagnation and inflation in the economy, which made it more difficult for experienced teachers to find alternative employment; the tying of salary increments to formal education, which caused more teachers to earn graduate degrees; and the Cuban revolution, which brought large numbers of middle-class Hispanic immigrants into the Dade County teaching force.

Data on places of birth support Lortie's contention that Dade County is a "better-than-average site"[3] for ascertaining the attitudes of teachers with varying regional and cultural origins. Although some shifts in the population occurred between 1964 and 1984, the overall picture today is still one of great diversity (Table 5). The most noteworthy change is the large influx (13%) of Cuban-born teachers – mostly members of the Cuban middle class – who arrived in the U.S. in the wave of immigration following the Cuban revolution.*

Clearly, the Dade County teaching force changed significantly on a number of demographic variables between 1964 and 1984. Moreover, except for the large influx of Cuban-born teachers, the changes in Dade County are similar to those that have occurred nationwide.[4] Whether the trends toward greater age, experience, and formal education in part "explain" some of the shifts in teacher attitudes that we will chronicle in the next section of this article remains a question. Our larger study will seek to understand the relationships among demographic changes, other social forces, and attitudinal changes.

TEACHER ATTITUDES/PERCEPTIONS

Satisfaction with job and workplace. Currently there are major concerns about attracting and keeping good teachers in the workforce. Satisfaction with work and with the conditions of work are indices related to the likelihood that individuals will remain in their jobs. The Dade County teachers were asked in 1964 and in 1984 how satisfied they were with teaching as a job and with their schools as workplaces. Although overall satisfaction rates remained relatively high across that 20-year period, slight declines occurred in levels of teacher satisfaction with both job and workplace. The decline was more marked with regard to the school as a workplace than with regard to teaching as a job (Table 6).

In 1964, 81% of the Dade County teachers expressed some level of satisfaction with teaching as a job; in 1984, by contrast, only 76% did so. In 1964, 80% of the Dade County teachers expressed some level of satisfaction with their schools; in 1984 only 68% did so.

Teaching orientation. Public and professional discussions of educational goals in recent years have focused on moving "back to basics." How has this trend affected Dade County teachers? Asked to describe the emphasis in their own classrooms, teachers seemed to be

TABLE 3.
Formal Education of Dade County Teachers

	1964 %	1984 %
Less than bachelor's degree (1964 only)	.4	--
Bachelor's degree	11.1	8.1
Bachelor's plus courses	63.6	34.5
Master's degree	7.3	18.5
Master's plus courses	17.1	37.6
Doctorate	.4	1.4

TABLE 4.
Ethnic Composition of Dade County Teachers

	1964 %	1984 %
White non-Hispanic (White, 1964)	82.5	59.3
Black non-Hispanic (Negro, 1964)	17.2	24.4
Hispanic (1984 only)	--	15.6
Asian and Native American (1984 only)	--	.7
Other (1964 only)	.3	--

TABLE 5.
Birthplace of Dade County Teachers

	1964 %	1984 %
Dade County	12.5	16.9
Florida, outside Dade County	11.1	9.8
Md., Va., N.C., S.C., Ga., Ala., Miss., Tenn., Ky.	21.5	13.7
N.Y., N.J., Del., Penn.	24.7	24.2
New England	5.2	4.1
Wis., Mich., Minn., Ill., Ind., O., W.Va.	15.2	9.4
A state west of the Mississippi	6.9	4.9
Foreign country (1964 only)	2.9	--
Cuba (1984 only)	--	13.0
Other foreign country (1984 only)	--	4.0

TABLE 6.
Teachers' Feelings About Job and Workplace

	Feelings About My Job		Feelings About My School	
	1964 %	1984 %	1964 %	1984 %
Very satisfied	31.9	27.4	30.4	23.6
Satisfied	26.5	29.1	26.4	25.3
More satisfied than not	22.6	19.7	23.7	18.6
Equally satisfied and dissatisfied	10.0	10.7	11.6	12.4
More dissatisfied than satisfied	6.0	7.6	5.4	9.9
Dissatisfied	1.9	3.5	1.6	5.6
Very dissatisfied	1.0	2.0	.9	4.6

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*To ascertain whether the 1984 data on teacher attitudes had been significantly affected by the sizable population of Cuban-born teachers (which did not exist in Dade County in 1964), we ran analyses of the 1984 data using both the total teacher sample and a subsample composed of only native-born teachers. Similarly, because the age of the teaching force had changed markedly over the 20-year interval, we ran separate analyses of the 1964 data and of the 1984 data from two age groups – 30-39 and 50-59 – to see whether response patterns similar to those of the total teacher samples would obtain. In all three of these additional analyses, we found no major differences in the patterns of stability and change from those that we have reported in this article. All patterns reported in this article are based on the complete data set for each year.

TABLE 7.

Dade County Teachers' Descriptions of Their Teaching Orientation

	1964 %	1984 %
I'm pretty much the "no-nonsense, get-the-learning-of-the-subject-matter-done" kind of teacher.	5.7	15.5
I tend toward the subject-matter emphasis, but I think other things are important too.	73.7	67.0
I'm about 50/50 on this.	17.6	16.3
I tend away from emphasis on subject matter, as I consider other things more important.	2.5	1.0
I think that emphasis on subject matter is the mark of a poor teacher.	.4	.1

TABLE 8.

Dade County Teachers' Perceptions of the Most Important School Goals for Younger and Older Students

	Most Important Goal for Students (K-6)		Most Important Goal for Students (7-12)	
	1964 %	1984 %	1964 %	1984 %
The basic tools for acquiring and communicating knowledge — the three R's	27.1	42.0	1.5	2.4
Efficient use of the three R's — the basic tools for acquiring and accumulating knowledge	44.5	35.1	14.0	24.3
A continuing desire for knowledge, the inquiring mind	9.3	8.5	29.5	31.0
The ability to live and work with others	8.8	5.4	10.4	5.8
The habit of weighing facts and imaginatively applying them to the solution of problems	2.7	1.2	17.0	13.4
A sense of right and wrong — a moral standard of behavior	2.0	4.9	3.0	5.0
An understanding of the government and a sense of civic responsibility	.1	0	1.4	1.2
An emotionally stable person, prepared for life's realities	4.4	2.1	16.1	10.5
Loyalty to America and the American way of life	.6	.2	1.8	.8
Information and guidance for a wise occupational choice	.3	.1	4.8	4.6
A well-cared-for, well-developed body	--	.1	.2	.2
Other	--	.4	.3	.8

TABLE 9.

The Kinds of Students Whom Dade County Teachers Prefer to Teach

	1964 %	1984 %
Students whose emotional needs are a challenge to the teacher	6.0	3.0
"Nice kids," from average homes, who are respectful and hard-working	36.2	46.6
Creative and intellectually demanding students who call for special effort	40.0	27.9
Underprivileged students from difficult or deprived homes for whom school can be a major opportunity	12.2	13.5
Students of limited ability (sometimes called "slow learners") who need unusual patience or sympathy	5.7	9.0

more subject-matter-oriented in 1984 than their counterparts had been in 1964. The percentage who described their orientation toward teaching as "no-nonsense, get-the-learning-of-the-subject-matter-done" nearly tripled, moving from 6% to 16% (Table 7).

Goals of schooling. Teachers' perceptions of the goals of schooling are related to their orientations toward teaching. In 1964 Lortie asked Dade County teachers to choose the "most important thing" schools should do for elementary (K-6) and for secondary (7-12) students – a question that we repeated in our 1984 study. It is important to note that all the teachers in each sample reported their perceptions of goals for both the elementary and the secondary levels, not just for the level at which they taught.

Generally speaking, the goals teachers chose in the two studies reveal a shift toward more rudimentary achievement for students today (Table 8). At the elementary level, a marked shift occurred from a focus on the efficient *use* of the three R's in 1964 to the simple *acquisition* of the three R's in 1984. At the secondary level, the largest shifts were away from intra- and interpersonal skills and creativity and toward efficient use of the three R's. If the acquisition of the three R's and the ability to use these skills are prerequisites for attaining many of the other goals listed as choices, the pattern of responses from 1964 to 1984 can be seen as a general lowering of teachers' expectations for their students.

The kinds of students whom teachers prefer to teach. In the years between 1964 and 1984 the student population changed in Dade County and in the U.S. as a whole. Students in 1964 were part of the "baby boom" generation. Today's student population includes larger proportions of blacks and Hispanics. Over the 20-year interval growth has also occurred in the number of students classified as eligible for various kinds of special education, and a corresponding increase has occurred in the number of teacher specialists trained to work with children who have learning disabilities and social problems.

In both 1964 and 1984, Dade County teachers were asked their first preference regarding the kinds of students to be placed in their classrooms for the coming year. The modal response of teachers to this question has changed over the 20-year period (Table 9). Twelve percent fewer teachers in 1984 chose the response that ranked highest among teachers in 1964, chosen by 40% of them: "creative and intellectually demanding students who call for special effort." Ten percent more teachers in 1984 than in 1964 chose the most popular response in the 1984 study, chosen by 47% of the Dade County teachers: " 'nice kids,' from average homes, who are respectful and hard-working." (A number of teachers who chose the "nice kid" option underlined the word *respectful*, an indication of the importance they placed on this attribute.)

Three percent fewer teachers in 1984 than in 1964 said that they wished to teach students with challenging emotional needs, but 3% more teachers in 1984 than in 1964 said that they wished to teach youngsters with limited cognitive ability.

Overall, the Dade County teachers in 1984 were more likely than their 1964 counterparts to seek students who would not drain them physically, intellectually, and emotionally. We have not yet examined the relationship of this phenomenon to the aging of the teaching force.

Sources of help for teachers. The potential sources of help with curricular and pedagogical problems have changed somewhat over the years. A growing number of curricular and supervisory specialists are available to teachers who need assistance. More recently the professional literature has placed great emphasis on the importance of having principals serve as instructional leaders within their schools.

The sources from whom teachers receive help on curriculum and teaching methods have changed in important ways since 1964 (Table 10). Teachers were less likely in 1984 (38%) than in 1964 (54%) to say that they receive help from line administrators and supervisors (principals, assistant principals for curriculum, and department chairpersons). But teachers in 1984 were more likely than teachers in 1964 to receive help from resource teachers and subject-matter specialists and from "other" sources. Teacher colleagues in the school were the primary source of help – both in 1964 and in 1984. The second most important source of help in both years was the assistant principal for curriculum, though 7% fewer teachers listed this source in 1984 than in 1964.

Assessment of teaching effectiveness. A strong emphasis on accountability since the mid-1970s and several recent reports on U.S. education by national commissions and task forces have increased public pressures for more thorough assessment of teachers' effectiveness. In light of these pressures, have teachers altered their perceptions of their own effectiveness or the gauges by which they judge effectiveness? Two questions that Lortie asked Dade County teachers in 1964 provide some information on these issues: 1) How difficult is it to assess one's own effectiveness? 2) What indicator is a good teacher most likely to rely on in assessing his or her own effectiveness?

The modal response to the first question changed between 1964 and 1984 (Table 11). In 1964 the largest percentage of teachers (49%) said that it is possible to know one's own effectiveness *at times*. In 1984, by contrast, the largest percentage of teachers (52%) said that it is *relatively easy* to know when one is really teaching effectively. In other words, teachers see their own effectiveness as increasingly easy to ascertain.

Between 1964 and 1984, responses to the question of which indicator a good teacher is most likely to use in assessing his or her own effectiveness changed even more dramatically (Table 12). In 1964 the modal response (59%) was the teacher's perception of what students were learning compared to the teacher's conception of what they should be learning. In 1984 that response was still the most popular, but it was chosen by only 37% of the Dade County teachers – a difference of 22 percentage points.

TABLE 10.

Sources from Whom Dade County Teachers Receive the Most Help with Curriculum and Methods

	1964 %	1984 %
The principal	9.4	3.6
Central office supervisor(s)	4.5	1.6
Resource teachers/subject-matter specialists	.5	12.5
Assistant principal-for curriculum/curriculum assistant	28.5	22.0
Department or grade-level chairperson	16.0	12.5
Other teachers in the school	36.8	36.0
Other	4.3	11.9

TABLE 11.

Dade County Teachers' Views of the Ease of Assessing Their Own Effectiveness

	1964 %	1984 %
It is *relatively easy* to know when one is really teaching effectively.	45.6	52.0
It is possible to know one's own effectiveness *at times*.	48.7	43.9
It is *relatively difficult* to know when one is really teaching effectively.	5.6	4.1

TABLE 12.

The Indicator That a Good Teacher Is Most Likely to Use in Judging Personal Effectiveness

	1964 %	1984 %
Reactions of other teachers familiar with their work and students	11.7	16.3
Opinions expressed by students generally	7.4	11.1
General observations of students in light of the teacher's conception of what should be learned	58.9	37.3
Assessments made by the principal	2.9	6.0
Assessments made by a "supervisor" or similar person	1.2	2.8
Results of objective examinations and various other tests	13.4	18.6
Reactions of students' parents	1.2	2.7
Other	3.3	5.3

More than a quarter of today's Dade County teachers claim to receive no satisfaction from extrinsic rewards.

The teachers in 1984 tended more often than their 1964 counterparts to rely on *external* indicators of effectiveness: other teachers, students, principals, supervisors, parents, and test scores. The indicators of effectiveness that increased in popularity the most between 1964 and 1984 were reliance on the reactions of other teachers and reliance on test scores. But the proportions of the teacher sample who cited the opinions of students, of the principal, of a supervisor, or of parents as the major gauge of teaching effectiveness have all more than doubled over the 20-year interval.

If we separate the indicators of effectiveness into two groups, *internal* and *external*, the change that occurred between 1964 and 1984 is a major one. In 1964, 59% of the Dade County sample believed that good teachers were most likely to gauge their effectiveness through self-assessment. In 1984, by contrast, 63% of the Dade County sample said that good teachers were most likely to rely on some type of external evaluation of effectiveness. (Remember, too, that more teachers in 1984 than in 1964 said that it is relatively easy to know when one is teaching effectively.)

Career and work rewards. In *Schoolteacher*, Lortie defined three categories of career and work rewards: extrinsic rewards, ancillary rewards, and psychic or intrinsic rewards. According to Lortie,

> The first includes what we usually think of as the "earnings" attached to a role and involves money income, a level of prestige, and power over others. . . . [S]ince they are experienced by all incumbents, they have an "objective" quality. Ancillary rewards are simultaneously objective and subjective; they refer to objective characteristics of the work which may be perceived as rewards by some (e.g., married women might consider the work schedules of teaching to be rewarding while men might not). Ancillary rewards tend to be stable through time and to be "taken for granted" rather than specified in contracts. . . . Psychic rewards consist entirely of subjective valuations made in the course of work engagement; their subjectivity means that they can vary from person to person.[5]

In his 1964 study Lortie asked Dade County teachers to specify the type of reward they saw as most important within each of the three categories. He also asked teachers to choose the most important category from *among* the three categories.

With regard to extrinsic rewards (Table 13), the largest proportion of Dade County teachers in 1964 – 37% – cited respect from others as the most important. Wielding influence followed closely, named by 36% of the sample. By 1984 the most frequent response of Dade County teachers was wielding influence, though 4% fewer teachers mentioned this reward in 1984 than in 1964. The second most popular response in 1984 was "I receive no satisfaction," mentioned by 28% of the sample – more than double its 1964 frequency (13%). In other words, more than a quarter of today's Dade County teachers claim to receive no satisfaction from extrinsic rewards.

Shifts have also occurred with respect to ancillary rewards (Table 14). In 1964 the most frequently chosen ancillary reward was "the special appropriateness of teaching for people like me," cited by 34% of the Dade County teachers. In 1984, however, the most popular response (cited by 35% of the teachers) was the schedule, which allows time for travel and family. The frequency of that response increased by 12 percentage points over the 20-year interval between Lortie's study and ours. Clearly, the ancillary reward that gives teachers the most satisfaction today is the ability to

TABLE 13.

Extrinsic Rewards That Are Most Satisfying To Dade County Teachers

	1964 %	1984 %
The salary I earn in my profession	14.3	14.2
The respect I receive from others	36.6	26.3
The opportunity to wield some influence	36.0	31.7
I receive no satisfaction at all from these things.	13.0	27.8

TABLE 14.

Ancillary Rewards That Are Most Satisfying To Dade County Teachers

	1964 %	1984 %
The relative security of income and position	22.6	16.1
The schedule (especially summer), which can permit travel, family activities, etc.	23.2	35.4
The opportunity that teaching offers to earn a living without much rivalry and competition with other people	4.8	2.8
The special appropriateness of teaching for people like me	34.1	28.6
None of these afford me satisfaction.	15.3	17.1

spend time *away* from work. The proportion of teachers who said they derive no satisfaction from ancillary rewards also increased slightly, from 15% in 1964 to 17% in 1984.

Dade County teachers have changed less with respect to the intrinsic or psychic rewards that give them the most satisfaction (Table 15). "Reaching" a student or a group of students was the modal response, both in 1964 and in 1984. The proportion of teachers who said they receive "no satisfaction" from intrinsic rewards was small – only 1.6% of the total sample in 1984, though this figure represents a fivefold increase over 1964. This change may be more important than the small numbers suggest, because teachers have always given the highest priority to the intrinsic rewards of their work.

Teachers in 1984 also differed from their counterparts in 1964 on which category of rewards – extrinsic, ancillary, or intrinsic – was most important to them (Table 16). The proportion of teachers who chose extrinsic rewards declined slightly, from 11.9% in 1964 to 11.3% in 1984. In both years, the largest number of teachers said that psychic or intrinsic rewards were the most important category. However, 6% less of the sample concurred on the importance of intrinsic rewards in 1984 than in 1964. Meanwhile, 6% more of the teachers in 1984 than in 1964 saw ancillary rewards as most important. This shift is an important indicator of change in the professional orientation of Dade County teachers.

The 20-year interval between 1964 and 1984 brought a gain of 8% in the number of teachers who favor differential pay and prestige.

Merit pay. In 1964 Lortie asked teachers whether or not they favored a system of differential pay and prestige, but his question did not use the words "merit pay." Fifty-eight percent of the teachers in his sample favored granting all teachers "more-or-less equal income and prestige" (Table 17). By 1984 the Dade County teachers who answered this same question split their responses almost evenly. Thus the 20-year interval between 1964 and 1984 brought a gain of 8% in the number of teachers who favor differential pay and prestige. This finding differs considerably from that of the 1984 Gallup Poll of Teachers' Attitudes Toward the Public Schools, which contained a question that was more directly worded: "How do you, yourself, feel about the idea of merit pay for teachers? In general, do you favor or oppose it?" To the directly word-

TABLE 15.
Intrinsic Rewards That Are Most Satisfying To Dade County Teachers

	1964 %	1984 %
The opportunity that teaching gives me to study, read, and plan for classes	3.4	1.9
The chance that teaching offers to develop mastery of discipline and classroom management	1.1	1.4
The times I know I have "reached" a student or group of students and they have learned	86.2	86.7
The chance to associate with children or young people and to develop relationships with them	7.9	7.6
The chance that teaching gives me to associate with other teachers and educators	1.0	.7
I receive no satisfaction from these.	.3	1.6

TABLE 16.
Most Important Category of Rewards To Dade County Teachers

	1964 %	1984 %
The salary and respect received and the position of influence	11.9	11.3
The opportunities to study, plan, master classroom management, "reach" students, and associate with colleagues and children	76.3	70.2
The economic security, time, freedom from competition, and appropriateness for persons like me	11.8	18.4

TABLE 17.
Dade County Teachers' Attitudes Toward Differential Pay and Prestige

	1964 %	1984 %
Teachers who excel should receive extra income and prestige.	41.6	49.8
Teachers should receive more-or-less equal income and prestige.	58.4	50.2

"Sometimes I think you can get too much *individual attention!"*

The teachers of today are older. They have spent more years in the classroom, and they have completed more college coursework.

ed question, 64% of the responding teachers said that they opposed merit pay.[6] Apparently, teachers' feelings about this issue are more negative when the question includes the phrase "merit pay" and the focus is solely on money.

Teachers' perceptions of their principals. Teachers' perceptions of the behaviors of their principals changed somewhat between 1964 and 1984 (Table 18). One percent fewer of the teachers in the 1984 sample felt that they could count on their principals to support them in relationships with parents. About the same proportion of teachers in both years felt that they could count on their principals to appreciate their best efforts. But 3% fewer of the teachers in 1984 agreed that their principals provide direction for the instructional program. Meanwhile, 4% more of the teachers in the 1984 sample said that their principals are effective executives, 7% more of the teachers in the 1984 sample said that their principals give them the autonomy they need to do a good job, and 12% more of the teachers in the 1984 sample said that their principals usually follow through on disciplinary problems.

TABLE 18.
Dade County Teachers' Perceptions of Their Principals

	1964 %	1984 %
I can usually count on the principal to support me in my relationships with parents.	87.4	85.5
I can usually count on my principal to appreciate my best efforts.	78.3	77.6
My principal provides a sense of direction in the instruction given in the school.	70.7	67.6
You could call my principal an effective executive.	65.2	68.8
I can usually count on my principal to provide me with the freedom to do a good job.	80.7	87.8
The principal usually follows through on discipline problems that I bring to his or her attention.	56.9	69.2

THE PERSPECTIVE OF 20 YEARS

Between 1964 and 1984 the teaching force in Dade County remained the same in some ways and changed – sometimes appreciably – in other ways. The teachers of today are older. They have spent more years in the classroom, and they have completed more college-level coursework. They are slightly less satisfied with their jobs and with their schools as workplaces than teachers were 20 years ago. However, the vast majority of today's teachers express some level of satisfaction with their jobs and workplaces – despite the changes that have taken place in U.S. education since 1964 and the negative publicity that their profession has received in recent years.

In terms of their orientation toward their work, today's teachers place greater emphasis on subject matter than teachers did 20 years ago. They are more likely today to see the acquisition and use of basic skills and the development of moral behavior as important school goals, but they are less likely now than in 1964 to see imaginative problem solving and social adjustment as primary goals for the schools. At the same time as teachers have moved toward covering subject matter and helping students acquire basic skills, several scholarly studies of schooling and reports of national commissions have advocated more emphasis on critical thinking and problem solving.[7] This raises two interesting questions: What forces brought about the shift in teachers' orientation toward their work between 1964 and 1984? And what forces will be required to reverse this trend and cause teachers to focus more sharply on problem-solving and higher-order thinking skills, as some critics now advocate?

Dade County teachers also changed between 1964 and 1984 with respect to the kinds of students they prefer to teach. Today's teachers prefer students who are "nice kids," hard-working and respectful. They are less inclined than teachers were in 1964 to want to work with creative and intellectually demanding youngsters who require special efforts. If, as the recent reports on U.S. education suggest, we need to move toward academic excellence for everyone – and if, as our data suggest, teachers increasingly prefer to teach youngsters who are easy to handle, rather than those who require special efforts if they are to reach their academic limits – how are we going to reconcile this discrepancy?

Meanwhile, the recent literature on effective schools has stressed the importance of the principal's role as instructional leader. Yet our data indicate that teachers receive less instructional help from their principals and assistant principals today than they did 20 years ago. Can this trend be explained solely by the increase in resource teachers, content-area specialists, and special education consultants? Or have other forces acted on teachers and principals to shift their interactions in directions different from those advocated by many researchers who have studied school effectiveness?

If teachers today receive less instructional help from their principals and assistant principals, they receive better follow-through on disciplinary problems. The teachers in 1984 were also somewhat more likely than their counterparts in 1964 to see their principals as effective executives. This raises other questions: Can the mass of principals become effective instructional leaders while simultaneously functioning as effective executives and disciplinarians? What forces inhibit or facilitate such a change? Why does the public view lack of discipline as the most important problem facing the schools, while teachers rank it only fourth in importance[8] and say that principals give them more support on disciplinary matters now than 20 years ago?

Meanwhile, more teachers today than in 1964 say that it is relatively easy to know when one is teaching effectively. However, in making such judgments, today's teachers rely increasingly on external sources rather than on self-assessment. One of the distinguishing characteristics of a professional is reliance on knowledge and skill (rather than compliance with external sources) in making decisions. This fact, coupled with the two findings we have just mentioned, raises several questions: Are today's teachers viewing themselves less as professionals than their counterparts did in earlier times? Are these findings indicators of the effects of "hyper-rationalization"[9] and technocratic ideology[10] on teachers? Will teachers' movement away from reliance on self-assessment ever make it possible to define academic excellence at a higher level than students' scores on tests of basic skills?

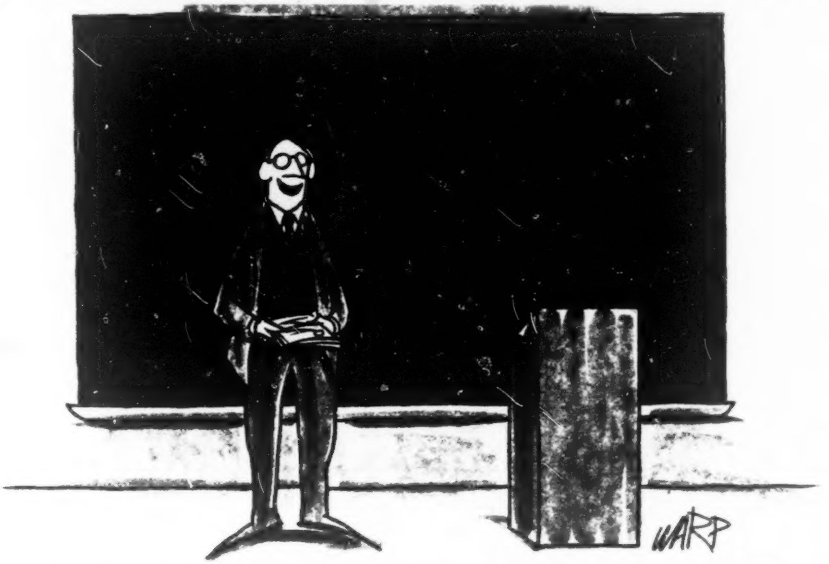
Our study of Dade County teachers in 1984 also showed that today's teachers find their work less rewarding than teachers found it 20 years ago. Today's teachers are less likely than teachers in 1964 to derive satisfaction from the respect of others or from the opportunity to wield influence. Their sense of job security and their feeling that the occupation of teaching is especially appropriate for them have both declined. But the satisfaction they derive from a schedule that allows them time away from work to fulfill other life needs has increased.

Both in 1964 and in 1984, the vast majority of teachers said that the most important rewards are intrinsic or psychic – especially a sense of "reaching" students. But 6% fewer teachers in 1984 said that intrinsic rewards are the most important kind, and 6% more teachers in 1984 said that they give priority to ancillary rewards. With regard to each of the three kinds of rewards – intrinsic, ancillary, and extrinsic – a larger number of teachers in 1984 than in 1964 said that they "receive no satisfaction from these."

How can teaching be made more rewarding? Will the currently popular "solutions" of merit pay or higher base salaries change teachers' feelings about their lack of influence and respect from the public? Are the lessened attractiveness of intrinsic rewards and the increased attractiveness of ancillary rewards (especially schedules permitting time away from work) related primarily to the demographic shift toward older teachers with greater family responsibilities? Or are these changes indicators of some more general change in teachers' attitudes toward their work? Is it possible to restore the status of teachers to previous levels or to raise their status even higher? Have the national commissions and task forces, state legislators, and the general public looked carefully enough at the complex issue of rewards, or have they focused too narrowly on salary and merit pay?

Our study of Dade County teachers in 1984 showed that today's teachers find their work less rewarding than teachers found it 20 years ago.

Clearly, the data from Lortie's 1964 study and from our 1984 replication of that study make possible an assessment of stability and change in teachers' views and attitudes over time. This article, the first of several reports, provides only a descriptive analysis of the changes that have occurred. But our findings raise important questions that those who seek to reform public education should ponder carefully. Through analyses of interview data and a study of forces that have affected teachers in the past, we are now seeking explanations for the changes reported here.



"Before I hand back your tests, I'd just like to tell you how nice it is to know that, in today's atmosphere of high-pressured competition, there are still students who don't give a damn about grades."

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2. Ibid., pp. 246-47.
3. Ibid., p. 246.
4. Louis Harris and Associates, *The Metropolitan Life Survey of the American Teacher* (New York: Metropolitan Life Insurance Co., 1984); and C. Emily Feistritzer, *The Condition of Teaching* (Princeton, N.J.: Carnegie Foundation for the Advancement of Teaching, 1983).
5. Lortie, p. 101.
6. Alec Gallup, "The Gallup Poll of Teachers' Attitudes Toward the Public Schools," *Phi Delta Kappan*, October 1984, p. 103.
7. See, for example, Ernest L. Boyer, *High School: A Report on Secondary Education in America* (New York: Harper & Row, 1983); John I. Goodlad, *A Place Called School: Prospects for the Future* (New York: McGraw-Hill, 1983); National Commission on Excellence in Education, *A Nation at Risk: The Imperative for Educational Reform* (Washington, D.C.: U.S. Government Printing Office, 1983); and Theodore Sizer, *Horace's Compromise: The Dilemma of the American High School* (Boston: Houghton Mifflin, 1984).
8. Gallup, p. 104.
9. Arthur E. Wise, *Legislated Learning: The Bureaucratization of the American Classroom* (Berkeley: University of California Press, 1979).
10. Arthur G. Wirth, *Productive Work – In Industry and Schools* (Lanham, Md.: University Press of America, 1983). K

tricts, but they should be given more authority and allowed additional resources to stimulate educational improvement. While state and local administrators should not have to generate mountains of paperwork to document their programs, they should keep records adequate to justify their decisions and make those records available to anyone who is interested.

With an overhaul designed to strengthen its central purpose of improvement and to build in more accountability at all levels, Chapter 2 has the potential to become a model federal, state, and local partnership. Like most federal programs, we have it for better or worse. Let's make it better.

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3. Anne Henderson, *Anything Goes: A Summary Report on Chapter 2* (Columbia, Md.: National Committee for Citizens in Education, 1985).

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7. Council of the Great City Schools, *Federal Education Budget Policy 1980-1984: Effects on the Great City Schools* (Washington, D.C.: Council of the Great City Schools, October 1984); idem, *Trends in Federal Funding to Urban Schools: A Progress Report on the Reagan Years* (Washington, D.C.: Council of the Great City Schools, 1983); American Association of School Administrators, *Private School Participation in Chapter 2* (Roslyn, Va.: AASA, April 1984); and U.S. Department of Education Planning and Evaluation Service, "Setting the Record Straight: What ED Knows About Private School Participation Under Chapter 2," Washington, D.C., 1984.

8. *Federal Register*, vol. 47, no. 224, pp. 52370 and 52385.

9. AASA, *Private School Participation. . .*, p. 8.

10. National Council of La Raza, "Community Access to Information on Education: A Case Study on the Education Block Grant," Washington, D.C., August 1984.

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12. E. H. White and Co., "Kaleidoscopes: Emerging Patterns of Response and Action in ECIA Case Studies of Chapter 2 in Selected States," Washington, D.C., 1983; and idem, "Preliminary Findings from a Study of the Implementation and Effects of Chapter 2 of the ECIA in Nine States," Washington, D.C., 1985.

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Writing for Publication: Playing to Win

by Kenneth T. Henson

How can you increase the odds that your manuscript will be accepted for publication? Heed what Mr. Henson has to say.

IN WRITING for publication there are three nevers. Never write until you have something to say. Never submit a manuscript to a journal that you haven't read. And never send a manuscript before it is ready. Though they seem painfully obvious when stated so starkly, my recent survey of 54 prominent journals in education found these to be the most common mistakes made by contributors.

There are many good reasons to write for publication. One is to communicate. An author should always provide information that a reader needs and does not have available in the existing literature. This requires knowing both the audience and the subject. Once you know what to offer an audience, write and rewrite until you communicate your message as clearly and succinctly as possible, without jargon or errors.

That rather obvious advice applies to all professional writing, whatever the field. What follows are some other suggestions that come from a 1985 survey of national journals in education. The return rate was 54 of 72 (75%). I asked the editors of these journals the questions most commonly asked by authors. The remainder of this article gives an overview of their responses, and Table 1 lists them in detail.

Should I alert the editor that I am sending the manuscript? Yes. The editor knows "what is right" for his or her journal. If the topic is wrong for the audience, or if a similar manuscript has recently been accepted, the editor will usually say so and thereby avoid a long delay that could cause the manuscript to become dated. You may either write or phone the editor. My survey found that most editors do not wish to receive query letters but that two-thirds do welcome phone calls.

How should I decide where to send the manuscript? In addition to identifying the correct audience, you should consider such factors as the journal's acceptance/rejection ratio, whether it is refereed, the size of its circulation, its typical contributors, and the length of time it takes the editor to respond to letters and manuscript submissions.

The acceptance/rejection ratio for the journals in my survey ranged from zero (some journals publish only solicited

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TABLE 1.
Characteristics of a Selected Sample of Education Journals

	Number of Readers	Acceptance Rate (%)	Refereed	Articles Refereed (%)	Theme Issues per Year (%)	Contributors Who Are University Personnel (%)	Preferred Length (in Ms. Pages)	Min./Max. Pages	Prefer Query Letters	Welcome Phone Inquiries	Issues per Year	Articles per Year	Days to Acknowledge Receipt of Ms. (Avg.)	Days to Answer Queries (Avg.)	Weeks Required for Decision	Months Required for Publication	Effect of Photos on Acceptance	Number of Photocopies Preferred
Academic Therapy	6,000	40	No	0	20	75	8	8/10	No	Yes	5	75	2	2	1	7	None	1
Action in Teacher Education	4,000	15	Yes	90	75	80	10	1/20	No	Yes	4	14	5	5	6	4	Likely	2
Alabama ASCD Journal	1,250	66	Yes	90	-	80	15	1/15	Yes	Yes	2	16	14	14	6	3	Possibly	3
American Middle School Education	500	25	Yes	95	35	80	12	4/10	No	Yes	4	7	5	5	5	9	None	2
American Biology Teacher	7,000	33	Yes	100	10	50	8	1/18	Yes	Yes	8	120	7	4	6	9	Possibly	2
American Secondary Education	3,000	40	Yes	95	0	75	8	6/12	Yes	Yes	4	48	10	7	10	5	Likely	2
Capstone Journal of Education	400	25	Yes	95	0	80	17	5/30	No	Yes	2	12	5	3	16	6	None	3
Child Development	8,000	20	Yes	99.9	10	90	30	1/60	No	Yes	6	125	2	2	8	8	Possibly	3
Clearing House	4,100	48	Yes	100	0	75	8	2/10	No	Yes	9	112	6	20	6	7	None	2
Comparative Education Review	3,500	20	Yes	100	0	50	25	20/40	No	No	4	35	10	5	9	8	None	3
College Student Journal	1,000	35	Yes	95	0	98	5	5/10	No	Yes	4	85	30	45	6	10	Possibly	1
Computing Teacher	12,000	20	Yes	90	0	75	2+	3/10	Yes	Yes	9	54	14	10	14	3	Possibly	1
Contemporary Education	1,500	40	Yes	10	50	75	12	10/15	Yes	Yes	4	12	2	2	6	12	None	2
Core Teacher	250	75	No	0	0	75	5	--	--	--	4	12	7	7	2	6	Possibly	0
Creative Child & Adult Quarterly	--	50	Yes	--	0	95	11	1/20	No	No	4	40	7	7	4	5	Possibly	3
Delta Pi Epsilon Journal	10,000	33	Yes	100	0	95	10	--	No	Yes	2	6	2	2	13	5	None	-
Early Years/K-8	75,000	2	No	0	20	Var.	5	--	No	No	8	11	--	4	2	Var.	None	0
Eastern Education Journal	1,000	50	Yes	100	30	30	32	5/10	No	Yes	3	24	30	14	12	3	Likely	3
Education	3,500	25	Yes	90	0	95	5	5/10	No	Yes	4	85	30	45	5	10	Possibly	1
Educational Forum	50,000	20	Yes	100	0	90	18	10/20	No	No	4	35	7	7	8	9	None	3
Educational Horizons	16,500	20	Yes	10	100	80	12	1/20	Yes	Yes	4	50	4	1	16	6	None	1
Educational Leadership	80,000	8	Yes	50	100	60	10	3/20	No	No	8	130	5	2	3	--	Possibly	1
Educational Perspectives	500	10	Yes	100	100	85	10	10/12	Yes	Yes	4	20	15	15	2	4	None	0
Educational Record	10,000	15	Yes	90	75	75	12	8/18	Yes	Yes	4	48	5	2	8	6	None	1
Educational Technology	5,000	40	Yes	--	Var.	50	14	12/15	--	Yes	12	95	5	5	10	6	Possibly	1
Florida Vocational Journal	18,000	--	No	0	100	25	11	9/12	Yes	Yes	6	30	15	7	4	4	Likely	1
High School Journal	2,300	25	Yes	100	25	90	14	8/25	Yes	Yes	4	48	15	15	9	6	None	2
Impact on Instructional Improvement	475	--	Yes	--	100	33	7	6/8	Yes	No	4	38	25	25	--	--	Possibly	3
Journal of Educational Research	3,400	25	Yes	100	0	90	--	--	No	Yes	6	10	5	10	12	5	None	2
Journal of Experiential Education	--	25	Yes	100	0	95	64	1/35	Yes	Yes	4	10	14	14	14	12	None	2
Journal of Instructional Psychology	220	80	Yes	80	0	80	12	2/15	No	Yes	4	8	10	20	6	6	None	-
Journal of Reading	20,000	25	Yes	99	12	85	15	1/25	No	No	8	90	3	3	6	6	Possibly	3
Journal of Research in Science Teaching	2,000	50	Yes	100	0	95	18	--	Yes	Yes	9	90	5	0	14	10	None	2
Journal of Teacher Education	7,000	7	Yes	90	25	99	19	8/20	Yes	Yes	6	70	2	1	6	5	None	3
Middle School Journal	3,800	50	Yes	90	0	50	8	--	No	No	4	35	10	5	18	5	Possibly	5
NASSP Bulletin	3,500	20	Yes	--	100	60	11	7/15	Yes	No	9	200+	3	2	4	10	None	1
North Carolina English Teacher	900	70	No	0	12	50	[illegible]	3/15	Yes	Yes	4	40	20	10	50	10	None	-
Phi Delta Kappan	145,000	4	No	--	0	--	14	12/16	Yes	Yes	10	Var.	8	2	8	6	Possibly	0
Planning & Changing	650	40	Yes	100	--	75	5	4/6	No	Yes	4	26	7	7	5	5	None	1
Principal	23,000	10	No	0	0	15	10	5/15	Yes	No	5	75	10	21	--	2	Likely	1
Perceptual & Motor Skills	3,500	--	Yes	100	0	--	--	--	Yes	--	6	360	1	1	4	5	Possibly	4
Psychological Report	3,000	--	Yes	100	0	--	--	--	Yes	--	6	360	1	1	4	5	Possibly	7
Reading Horizons	1,000	50	Yes	90	0	85	9	2/14	No	--	4	36	7	6	7	10	Possibly	0
Reading Research Quarterly	10,000	8	Yes	100	0	85	25	--	No	No	4	32	10	7	12	12	None	4
Reading Teacher	40,000	20	Yes	99	12	85	12	1/20	No	No	8	90	3	3	6	6	Possibly	3
School Science & Mathematics	5,500	2.8	Yes	100	0	99	12	6/18	No	Yes	8	56	2	2	7	9	None	4
Science Education	2,000	42	Yes	99	0	--	20	4/35	No	No	5	60	30	5	14	6	Possibly	3
Social Studies	3,000	40	Yes	100	10	70	10	--	Yes	Yes	6	60	3	7	15	9	Possibly	1
Teachers College Record	3,000	10	Yes	90	25	85	25	20/30	No	No	4	24	10	7	7	7	None	2
Teacher Educator	2,000	20	Yes	100	0	2	32	5/20	No	Yes	4	22	2	2	5	6	None	0
Tech Trends	10,000	50	No	0	0	90	10	6/15	No	Yes	8	100	7	2	3	4	Likely	0
Theory Into Practice	4,000	--	Yes	100	100	75	15	10/18	No	--	4	48	10	1	8	12	None	2-3
Vitae Scholasticae	200	25	Yes	100	0	80	27	5/50	No	Yes	2	35	8	10	6	12	Possibly	2
Vocational Education Journal	50,000	20	No	0	100	70	7	6/8	No	Yes	8	120	50	10	16	Var.	Likely	1

materials) to 80%. The average acceptance rate is about 30%. More than four-fifths of these journals are refereed: 14% internationally, 33% nationally, and 21% by co-editors. Still others use a combination of these methods.

The refereeing system for U.S. journals is anything but standard, however. Because many of these journals are published on university campuses, many editors send manuscripts to professors on the same campus to be reviewed for accuracy and to be evaluated for publication. This meets the definition of refereeing espoused by some of these editors. Simply having manuscripts rated independently by the journal's staff editors appears to qualify other journals to claim refereed status. Still others send manuscripts across the country for independent rating. Even these journals, however, frequently accept manuscripts without sending them to readers for review.

The circulation size for the journals in my survey ranges from around 250 to 145,000. Most of the journals fall between 5,000 and 10,000. Seventy percent of the contributors to the journals I surveyed are university personnel. For some journals, university personnel account for only 2% to 3% of the contributors, while for others 99% of the contributors are university personnel. It takes the editors from two days to 30 days to answer a query letter. The most common time is about two weeks.

The editors in my survey acknowledge receipt of manuscripts in from one to 45 days. On the average, they acknowledge manuscripts in about a week (8.4 days). But a publishing decision takes considerably longer – anywhere from two weeks to 50 weeks. The average is about two months (8.4 weeks). Once accepted, the articles appear in most of these journals within the following 12 months; the average time from acceptance to publication is about seven months. For a few journals the lead time may exceed three years.

How long should I make my manuscript? On the average, these editors prefer manuscripts of about 10 pages, but, because the preference from journal to journal ranges from one page to 32 pages, it would be worthwhile to determine the preferred length for each particular submission. Be aware that the preferred length is strongly tied to economics. For example, one printed page in the *Phi Delta Kappan* costs upwards of $650. Thus the difference in the cost of printing a six-page article and a one-page article exceeds $3,000. If your chosen journal is not included in Table 1, count the number of words in an article of average length in that journal and divide by 300. This will give you an approximate length in manuscript pages; do not exceed this length.

Should I write for theme issues? In recent years, more and more education journals are planning issues around central themes. Almost half of the editors in my survey (48%) reported that their journals plan one or more theme issues per year; some publish *only* theme issues. To help contributors, most of these journals list upcoming themes and the deadlines for submitting articles on each theme. Using this information to time your submission or to redirect your manuscript when you learn that a journal has recently published a theme issue on your topic could help improve your acceptance rate and avoid unnecessary delays.

In addition to the original copy, how many photocopies should I send? This depends on the journal. Twenty percent of the journals in my survey want one additional copy; 23% want two; 23% want three; 4% want four; and 4% want five. One journal wants up to seven additional copies. The remaining 24% don't want any additional copies. Most journals provide this information on their inside covers. If the journal to which you wish to submit does not, you can get that information by requesting the author's guidelines from the editor or, in some cases, by consulting such reference sources as *Writer's Market*.

Would sending photos help me get my manuscript accepted? Sometimes sending photos does help. Nineteen percent of the editors I surveyed said that photos could help. Another 13.5% said that photos are likely to help. If you submit photos, however, send black-and-white glossy prints only. The preferred size depends on the individual journal. Photos that portray action in a natural setting are usually preferred. If human subjects are identifiable, you should ask them to sign permission forms authorizing you and the journal to use their pictures. Parents or guardians should sign for minors. On a piece of masking tape affixed to the back of each photo, indicate the name of the photographer who is to receive credit for the photo.

What are some additional ways that I can enhance my chances of getting my manuscript accepted? Read several recent issues of the journal to which you intend to submit a manuscript. Direct your article to the readers, not to the editor. Write simply and clearly about a topic that you like and understand. Be sure that you are contributing some new knowledge or technique or that you are approaching an issue from a distinctive perspective. Then proofread your manuscript and edit out the jargon, superfluous words, and errors. Use such resources as Table 1 to help you tailor your manuscript to the demands of your selected journal and to the needs of its readers.

With all these variables controlled, your manuscript and its fate will be in the hands of the editors. If it is rejected, remember that even editors make mistakes. Try again. K

LIL MAGICIAN KIT
James Estes

"Robby wants to show us a trick he's learned to do – can you watch, Herb? . . . Herb?"

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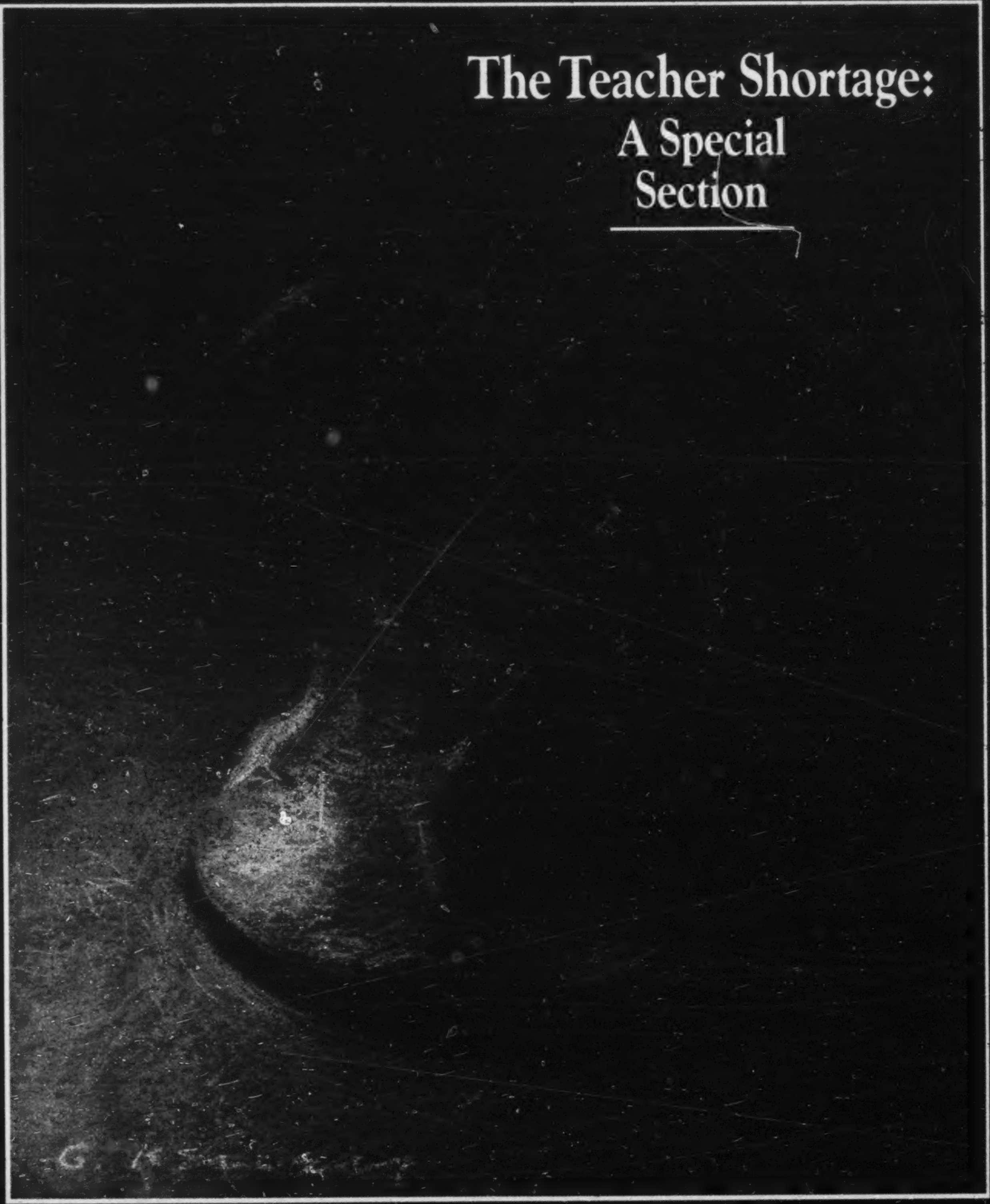
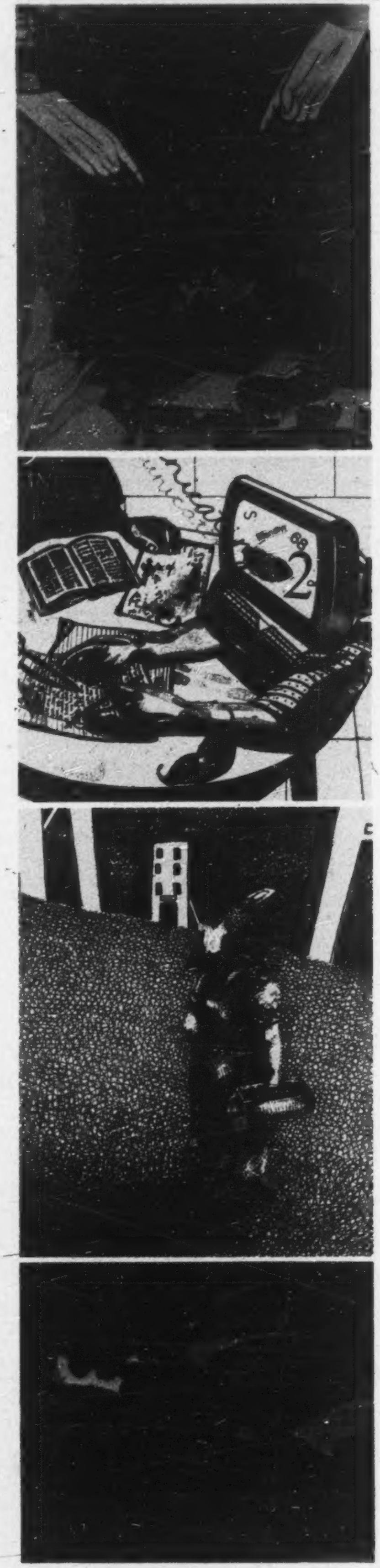
PHI DELTA
JUNE 1986

KAPPAN



The Teacher Shortage:
A Special Section



Phi Delta June 1986 • Volume 67 • Number 10

KAPPAN

FEATURES

703 **Inside the Citadel in 1940,** *by Robert L. Hampel*

708 **Collaborative Links with the Community: Lessons from Exemplary Secondary Schools,** *by Bruce L. Wilson and Gretchen B. Rossman*

712 **Toward a Comprehensive Strategy for Addressing the Teacher Shortage,** *by Willis D. Hawley*

719 **Licensing Teachers: Lessons from Other Professions,** *by Martin Haberman*

723 **And Let the Air Out of the Volleyballs,** *by Gary D. Watts*

725 **Emergency Certificates, Misassignment of Teachers, and Other 'Dirty Little Secrets,'** *by Robert A. Roth*

728 **A Radical Proposal for Teacher Preparation,** *by Edwin J. Meyer*

731 **Privatization and Public Education,** *by Myron Lieberman*

735 **A Diamond in the Rough?,** *by James A. Mecklenburger*

738 **Instructional Design Flaws in Computer-Assisted Instruction,** *by Julie S. Vargas*

745 **Is CAI Cost-Effective?,** *by Henry M. Levin and Gail Meister*

750 **CAI Can Be Doubly Effective,** *by Richard P. Niemiec, Madeline C. Blackwell, and Herbert J. Walberg*

752 **Solving Educational Problems Through Partnerships,** *by Alice McDonald*

754 **No Home Working – Again!,** *by John W. Dougherty*

DEPARTMENTS

698 **THE EDITOR'S PAGE,** Desperately Seeking Susan

699 **WASHINGTON REPORT,** *by Anne C. Lewis*

701 **STATELINE,** *by Chris Pipho*

756 **PAR,** Suicide Among the Young, *by Deborah Burnett Strother*

760 **DE JURE,** Supreme Court Ducks Another Important Case, *by Thomas J. Flygare*

761 **IN EUROPE,** The Place of Europe's Women, *by Michael G. Bruce*

763 **PROTOTYPES,** The School/Community Survey: A Useful Tool in Improving Education, *by Terri V. Hunt, Marla J. Weatherl, and Deborah A. Verstegen*

764 **BOOKS,** *Laurence D. Brown*

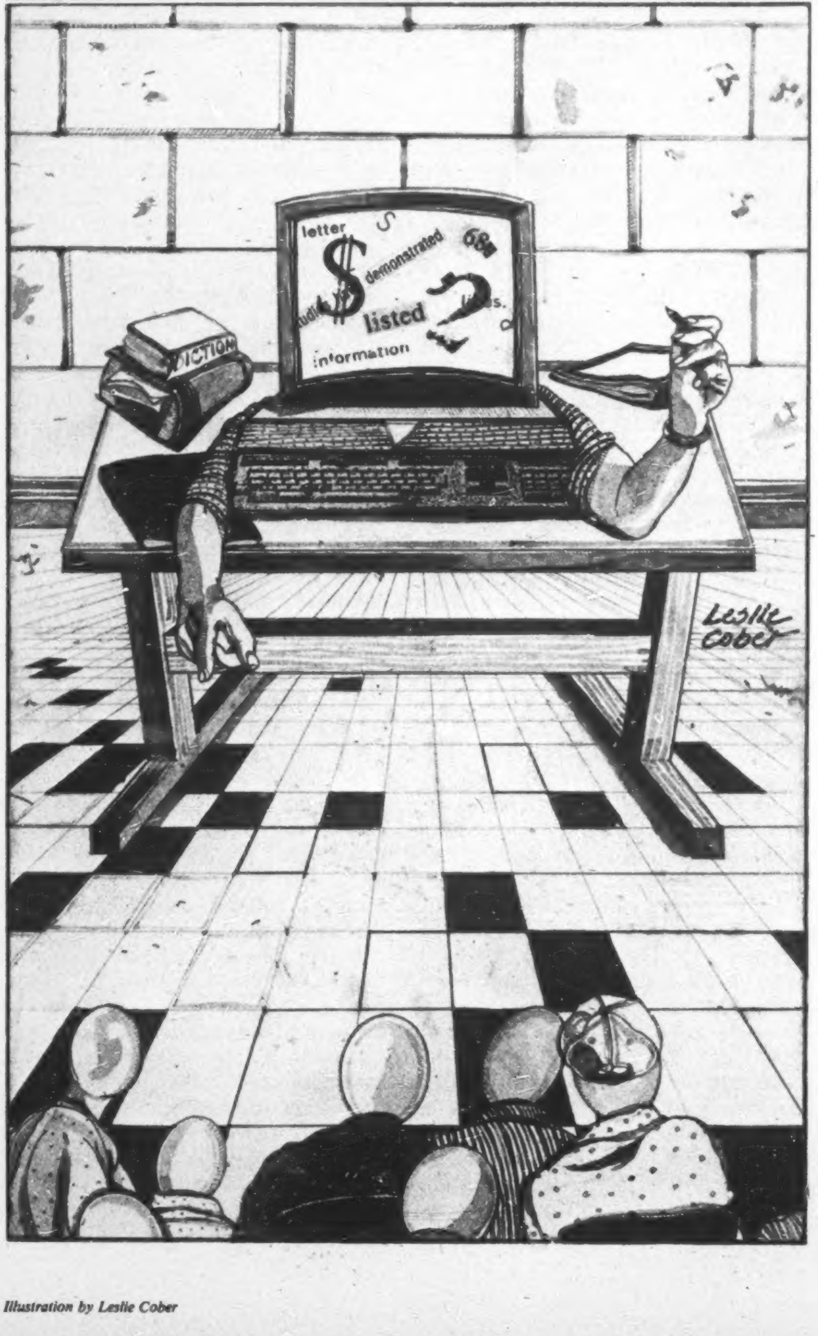
766 **NEWSNOTES**

769 **BACKTALK**

773 **INDEX, Vol. 67**

Cover Illustration: Gary Kelley

Is CAI Cost-Effective?



by Henry M. Levin and Gail Meister

Computer-assisted instruction is relatively cost-effective, affirm the authors, but not as cost-effective as peer tutoring. Educators should not blindly assume that CAI is tops.

IN THE 1980s, computers and education have become inextricably linked in the minds of citizens and on the agendas of school reformers. Parents worry about whether their children are "computer literate," educators worry about tracking the latest trends in technology, and students worry about gaining access to computers, both for their increasingly sophisticated games and for more serious pursuits.

Amid all this new interest in the uses of computers in education, one of the oldest uses of computers in schools, computer-assisted instruction (CAI), has come in for renewed attention. In CAI, computers are used as supplements to conventional teacher-led instruction; CAI is now used across a range of subjects in most U.S. schools.

Reduced costs and improved performance are two compelling reasons for increasing the use of computers in instruction. The price of microcomputers has fallen by 50% since 1980. At the same time, a tremendous surge in the development of educational soft-

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Illustration by Leslie Cober

ware has occurred. In addition to drill-and-practice programs to supplement instruction, software is now available for a wide variety of courses, including programming, logic, music, graphics, and mathematics. Despite the shrinking funding base for education in the late 1970s and early 1980s, most schools in the U.S. now have at least one microcomputer, and a great many have computer laboratories with 20 or more microcomputers.

In the rush to join the computer revolution, however, schools have not always taken the time to plan carefully. Often the extent of financial planning that precedes a decision to buy computer equipment is limited to making sure that sufficient funds are available to purchase a specified number of microcomputers, with no thought given to how they will be used. Moreover, many educators assume that the purchase of computers represents the principal cost of providing computer-assisted instruction; in fact, the purchase price is only a small portion of the cost.[1] As a result, many schools have purchased computers only to find them underused, or even unused, for want of trained personnel, good software, maintenance, or secure facilities in which to house the machines.

CAI is only one of many instructional approaches, and the cost-effectiveness of CAI is the degree to which it can provide instruction more efficiently than alternatives, as reflected in the cost of reaching a given level of educational achievement or meeting other educational goals.[2] Although many advocates claim that the drastic reductions in the costs of microcomputers have made CAI highly cost-effective, rarely are their claims supported with actual data. Our analysis here will compare figures for the costs and cost-effectiveness of CAI with those for three other interventions.

COSTS OF CAI

When parents, educators, and policy makers refer to the costs of CAI, they are often thinking only of the purchase price of the microcomputers to be used. Since microcomputers with instructional capabilities can be bought for less than $1,000 and will last for several years, CAI appears to be a very inexpensive instructional option. By this logic, a school with 1,000 students could acquire 50 computers to be used for instruction for something less than $50,000. That price would be equal to the average annual salaries of two teachers. Moreover, since the computers will last for several years, the cost in any one year would be only a fraction of the total cost. For example, if the machines were used for only three years, their apparent cost would be about $17,000 per year, or $17 per student per year. Clearly, such a price seems a very modest part of the $3,000 or so spent on each student each year.

> **Despite assertions that CAI is more cost-effective than other instructional interventions, little or no evidence exists to support this notion.**

The problem with this kind of calculation, however, is that microcomputers by themselves are only one element in a more complex system for delivering instruction. In addition to the machines themselves, schools need a secure facility in which to house them, appropriate software, knowledgeable personnel, provisions for maintenance, and other support services. The proper way to determine the cost of CAI is first to ask what ingredients are needed to deliver a particular level of instructional services, then to determine the costs of those ingredients, and finally to determine who pays for them. This "ingredients approach" takes account of all the costs of CAI and apportions them among the sources of support.[3]

An ingredients approach entails a careful analysis of the CAI program in question, whether proposed or already in place. This analysis requires a description of the number of students, the duration of the instruction, and the necessary personnel, facilities, hardware, software, training, and maintenance. After a detailed inventory of these ingredients has been completed, their costs are determined. Then the costs can be allocated to the different constituencies who will provide the ingredients or pay for the services.

It is particularly important to allocate the costs of CAI hardware and facilities over their respective lifetimes. For example, if a renovated facility is expected to last for 20 years and the hardware for only five years, it is inappropriate to calculate the cost per student solely according to the expenses incurred in the year in which the facilities are renovated or the computers purchased. Although adequate financing is necessary for start-up expenses, the actual cost of CAI per student will depend on the number of years that the facilities and equipment are used. Fortunately, easily applied techniques are available for converting expenditures on equipment and facilities with different lifetimes into annual cost estimates.

The first systematic study of the costs of CAI was carried out in 1978 for the widely used drill-and-practice approach of the Computer Curriculum Corporation (CCC).[4] The CCC delivery system uses a computer laboratory with a minicomputer and 32 student terminals. The lab is staffed by an instructional coordinator and part-time instructional aides. (We should note here that cost reductions and performance improvements for microcomputers have paralleled those for minicomputers.) Using the ingredients approach, we calculated that a daily session of 10 minutes of drill and practice would cost about $136 a year per student. Even considering the relatively high cost of computer equipment in 1978, the hardware accounted for only about one-quarter of the total annual costs for delivering CAI services.

In 1984 the costs were reestimated, using the most recent costs for computer hardware, software, and maintenance and using 1980 costs for personnel, facilities, and other ingredients.[5] The 1980 data were part of a standard database on costs used at the time for comparing different types of interventions. However, the cost information for the hardware and software was updated to 1984 to take account of the tremendous reductions in these costs between 1980 and 1984.

We found that the cost of providing the same CAI services as in the earlier study had fallen to about $120 per student per year. The relative cost of the computer hardware had decreased drastically between 1978 and 1984, from one-quarter of the total annual cost of the CAI services to one-ninth. This finding highlights the importance to school decision makers of considering costs other than hardware when estimating the cost of a proposed CAI program. Almost 90% of the cost of CAI is associated with personnel, software, training, and other factors. In 1984 personnel costs alone accounted for about

38% of the total, and curriculum and other software costs accounted for another 21%.

These figures suggest the limits to future reductions in the cost of CAI. Reductions in hardware, however large, can affect only about 11% of the total cost of CAI.

Let us try a hypothetical exercise in arithmetic. Assume that hardware costs in the future will decline so drastically that computers will be given away at no cost whatever. Although this is admittedly an absurd assumption, it helps illustrate the limit to which reduction in hardware costs would reduce the overall cost of CAI. The use of free computers would reduce the cost of a CAI program by 11% at most. However, since the costs of other ingredients would tend to rise, the total reduction in costs would be somewhat less. Thus claims that drastic reductions in the cost of microcomputers will have an equally drastic impact on the cost of CAI are vastly overstated.

An additional finding of our research is that microcomputers linked in a local area network do not appear to be cheaper than a central minicomputer connected to data-entry terminals. Microcomputer networks are designed to take advantage of capabilities for sharing such peripheral equipment as storage devices and printers, for communicating among users, for monitoring instruction and obtaining progress reports for groups of students, and for storing student records. Although minicomputers have been performing these tasks for some time, many educators have assumed that inexpensive microcomputers linked with a local network would perform the same tasks for less. We conclude, from our study of currently available technologies, that minicomputers with terminals are actually less expensive and more reliable than comparable configurations using microcomputers.[6]

FOUR INTERVENTIONS

Despite vigorous assertions that CAI is more cost-effective than other instructional interventions, little or no evidence exists to support this notion. Our research, conducted with Gene Glass under the auspices of the Institute for Research on Educational Finance and Governance at Stanford University, compared the cost-effectiveness of four educational interventions designed to raise mathematics and reading achievement at the elementary school level.[7] The interventions we studied were CAI, cross-age tutoring, reduced class size, and a longer school day. Each of these interventions is an attempt to improve educational achievement, and CAI and longer school days were prominent among the recommendations of the recent national reports on reforming education.

Cost-effectiveness analysis requires detailed and precise data on both costs and effects. Effectiveness data can be derived only from a systematic evaluation of a particular intervention in a particular setting. Although there have been a great many approaches to CAI, few have been evaluated. The single most prominent use of CAI has been to provide drill and practice to reinforce classroom instruction in mathematics and reading. Educators have had extensive experience with this use of CAI, and competent evaluations are available.

The relative cost-effectiveness of CAI could improve as new curriculum materials and new applications continue to be developed.

BASIC COMPUTER

"We will now begin our computer training workshop for teachers."

CAI. We chose the drill-and-practice curricula of the Computer Curriculum Corporation as the specific CAI approach for our cost-effectiveness evaluation. The Educational Testing Service evaluated the effectiveness of this approach in a four-year experiment in the Los Angeles Unified School District.[8] To derive cost estimates, we identified each program ingredient and determined its cost. As we said above, we used 1984 prices for the computers, software, and maintenance, but we used 1980 prices for the personnel, facilities, and other factors.

Our cost estimation probably understates slightly the cost of CAI by merging the latest hardware costs with relatively low personnel costs. Unlike CAI, the cost of the three remaining educational interventions did not experience dramatic changes over the period, and so their cost estimates are based uniformly on 1980 prices. We settled on the 1980 figures in order to provide a consistent set of national costs on which to base our analysis across interventions.

Cross-age tutoring. Cross-age tutoring refers to the use of adults or older students as tutors. This practice is attractive because considerable evidence suggests that, when students are used as tutors, both tutor and tutee gain in academic achievement from the tutoring relationship.

We chose for our comparison the Cross-Age Structured Tutoring Program for Reading and Mathematics, used in the public schools of Boise, Idaho.[9] Staffing for the program in each elementary school of about 300 to 400 students included adults as tutor/managers in reading and mathematics and as one-on-one tutors. The adults worked with the children in the upper grades, while children in the upper grades worked with second- and third-graders. The services of a district coordinator were allocated to the school on a part-time basis. Daily tutoring sessions used commercially available software and lasted about 20 minutes. Each school had about 60 students tutoring 60 younger children and about 26 older students assigned to adult tutors.

Increasing instructional time. Increasing instructional time was a centerpiece of the recent national calls for reforming education. The specific intervention we chose to evaluate was the addition of one hour of instruction per day, half of this time devoted to reading and half of it to mathematics. Data on the effectiveness of this increase in instructional time were derived from the most important evaluation of the effects of time on learning: the Beginning Teacher Evaluation Study (BTES), which was sponsored by the National Institute of Education.[10]

Reducing class size. Reducing class size has traditionally been seen as a means of improving instruction. We derived our evidence regarding the effects of class size on achievement in reading and mathematics from a meta-analysis of nearly 80 evaluations, conducted by Gene Glass and his colleagues.[11] Specific estimates were made for increases in mathematics and reading achievement associated with reductions in class size from 35 to 30 students, from 30 to 25 students, from 25 to 20 students, and from 35 to 20 students. We estimated costs for the additional teachers, classrooms, and classroom resources required for this intervention.

COST-EFFECTIVENESS

Effectiveness. Table 1 shows the estimated effectiveness of each of the four interventions in months of additional student gain in achievement per year of instruction. That is, each of the interventions represents a supplement to existing instruction, so the effects are evaluated in terms of the additional achievement expected for children who receive the instructional intervention relative to those who do not.

The study from which these findings are taken measured effect size in standard deviation units. However, a standard deviation of achievement at the elementary level is approximately equal to an academic year of achievement, where an academic year equals 10 months. For this reason, Table 1 presents the effectiveness results in terms of months of additional student gain in each subject; each month of gain is about one-tenth of a school year of achievement.

TABLE 1.
Estimated Effectiveness of Four Educational Interventions in Months of Additional Achievement Gain per Year of Instruction

			Mathematics	Reading
CAI			1.2	2.3
Cross-age tutoring				
Peer component			9.7	4.8
Adult component			6.7	3.8
Increasing instructional time			0.3	0.7
Reducing class size				
	From	To		
	35	30	0.6	0.3
	30	25	0.7	0.4
	25	20	0.9	0.5
	35	20	2.2	1.1

TABLE 2.
Annual Cost of Four Educational Interventions

			Cost in Dollars per Student per Subject
CAI			119
Cross-age tutoring			
Peer component			212
Adult component			827
Increasing instructional time			61
Reducing class size			
	From	To	
	35	30	45
	30	25	63
	25	20	94
	35	20	201

TABLE 3.
Estimated Effectiveness of Four Educational Interventions in Months of Additional Achievement Gain per Year of Instruction for Each $100 per Student

			Mathematics	Reading
CAI			1.0	1.9
Cross-age tutoring				
Peer component			4.6	2.2
Adult component			0.8	0.5
Increasing instructional time			0.5	1.2
Reducing class size				
	From	To		
	35	30	1.4	0.7
	30	25	1.2	0.6
	25	20	1.0	0.5
	35	20	1.1	0.6

The CAI intervention produced a healthy result, with more than a month of student gain in mathematics and more than two months (almost a quarter of a year) in reading, for a 10-minute daily session in each subject. Even larger effects were found for peer tutoring, however, with a gain of almost one full year in mathematics achievement and almost half a year in reading achievement. By contrast, reducing class size showed less than a month of gain in both reading and mathematics for each five-student decrement. A direct reduction from 35 to 20 students, however, was associated with gains similar to those for CAI, but with subject areas reversed. Finally, the addition of a half hour per day of instruction in each subject yielded very small gains.

Cost. Table 2 shows the estimated cost per student of each intervention, using the ingredients method of estimating costs. The cost per student per subject represents the total value of resources required to replicate each intervention for either reading or mathematics, divided by the number of students. The most costly of the interventions is adult tutoring, followed by peer tutoring and a reduction in class size from 35 to 20. The cost of CAI is about half that of peer tutoring. Reducing class size in five-student decrements or increasing instructional time by a half hour per day in each subject are the least costly interventions.

When the costs for each intervention in Table 2 are combined with the effectiveness results from Table 1, a cost-effectiveness ratio can be derived. The combination allows us to calculate the expected gains in student achievement associated with a given cost. Table 3 shows the expected gains in student achievement of each intervention for each $100 invested per pupil.

CAI is estimated to produce a gain of about one month in mathematics and two months in reading for each $100 spent per student. Peer tutoring, by contrast, is associated with almost half a year of achievement gain in mathematics and almost a quarter year of achievement gain in reading for each $100 invested per student. The other interventions show lower cost-effectiveness than peer tutoring or CAI. Indeed, though adult tutoring shows one of the largest effects, its high cost creates a cost-effectiveness ratio that is among the lowest of the four interventions.

From these results, we conclude that the specific CAI intervention we evaluated was more cost-effective than adult tutoring, reducing class size, or increasing instructional time. However, it was considerably less cost-effective than peer tutoring in mathematics and slightly less cost-effective than peer tutoring in reading. This suggests that, though CAI is a relatively cost-effective intervention, it is not necessarily the most cost-effective approach to improving mathematics and reading achievement in the elementary grades.

The relative cost-effectiveness of CAI could improve as new curriculum materials and new applications are developed. Work is under way at the Institute for Research on Educational Finance and Governance to explore the cost-effectiveness implications of rapid changes in hardware, software, instructional configurations, and approaches to implementation.

So far, however, the evidence suggests that educators should not assume blindly that CAI is a more cost-effective intervention than the alternatives. Clearly, the criteria for evaluating proposed or existing CAI and other educational interventions must depend on more than just cost-effectiveness. The evaluation criteria also include the instructional goals of a school, the resources available for reaching those goals, the proficiency of the staff in using a given intervention, and a great many other factors.

PSYCHIATRIC
SCHWADRON

"Then one day I realized that, when the office computers are down, I'm down."

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2. Henry M. Levin, "Cost-Effectiveness Analysis in Evaluation Research," in M. Guttentag and E. Struening, eds., *Handbook of Evaluation Research, Vol. 2* (Beverly Hills, Calif.: Sage, 1975), pp. 89-122.

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4. Henry M. Levin and Louis Woo, "An Evaluation of the Costs of Computer-Assisted Instruction," *Economics of Education Review*, Winter 1981, pp. 1-26.

5. Henry M. Levin, Gene V Glass, and Gail R. Meister, *Cost-Effectiveness of Four Educational Interventions* (Stanford, Calif.: Institute for Research on Educational Finance and Governance, Project Report No. 84-A11, May 1984). This comparison is discussed in greater detail in Henry M. Levin, *Costs and Cost-Effectiveness of Computer-Assisted Instruction* (Stanford, Calif.: Institute for Research on Educational Finance and Governance, Project Report No. 84-A21), pp. 18-22.

6. Levin, Glass, and Meister, pp. 24-25.

7. Ibid.

8. Marjorie Ragosta et al., *Computer-Assisted Instruction and Compensatory Education: The ETS/LAUSD Study, Final Report* (Princeton, N.J.: Educational Testing Service, Project Report No. 19, April 1982).

9. Independent School District of Boise City, "1982-83 Evaluation Report, PROJECT INSTRUCT, Chapter 1 Program," July 1983; idem, "Submission to Joint Dissemination-Review Panel (J.D.R.P.), Cross-Age Structured Tutoring Program in Math," mimeo, n.d.; and idem, "Submission to Joint Dissemination-Review Panel (J.D.R.P.), Cross-Age Structured Tutoring Program in Reading," mimeo, n.d.

10. Charles W. Fisher et al., "Teaching Behaviors, Academic Learning Time, and Student Achievement: An Overview," in C. Denham and A. Lieberman, eds., *Time to Learn* (Washington, D.C.: National Institute of Education, 1980), pp. 7-32; and Nancy Karweit, *Time-on-Task: A Research Review* (Baltimore: Center for Social Organization of Schools, Johns Hopkins University, Report No. 332, 1983).

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CAI Can Be Doubly Effective

by Richard P. Niemiec, Madeline C. Blackwell, and Herbert J. Walberg

Hold on, say the authors. Computer-assisted instruction is about twice as effective as peer tutoring. They explain why.

HENRY LEVIN and Gail Meister propose cost-effectiveness as a way of choosing among instructional alternatives. They conclude from their analysis that computer-assisted instruction (CAI) is not the most cost-effective instructional intervention and that peer tutoring yields the highest achievement gains per $100 paid for instruction. Accurate, broad-based, and up-to-date estimates of these interventions, however, indicate that CAI is about twice as cost-effective as peer tutoring.

To determine ratios of cost-effectiveness, Levin and Meister first calculated the ratio of effects of each of several instructional methods to its respective costs. The numerator of that ratio is the effect of the intervention expressed in standard deviation units or effect sizes. For ease of interpretation, they have converted these effect sizes into achievement gains in months (and assumed that one-tenth of a standard deviation equals a one-month grade equivalent – a questionable procedure but one that we retain here for purposes of this discussion). The denominator of the ratio is an estimate of the yearly per-pupil cost of the intervention. This ratio is multiplied by 100 to estimate the achievement gains per $100. The accuracy of Levin and Meister's estimates is crucial. First, consider their estimation of the costs of implementing CAI and peer-tutoring programs. Using their ingredient method, they estimate that the per-pupil cost of CAI is $119 per year and that the per-pupil cost of peer tutoring is about $212 per year. These estimates are derived from a combination of 1984 computer hardware costs and 1980 costs for all other ingredients. These estimates assume that 1980 costs adequately reflect the true costs of implementing the programs in 1986.

Although this may be a valid assumption, other estimates that make different assumptions will yield different costs. For example, increasingly better software could make teacher supervision of and assistance to students less time-consuming; teacher aides, who are paid significantly less than teachers, could take responsibility for some tasks; and the computer could keep track of individual student records. Such changes might reduce the costs of labor considerably.

The estimates of the effects of the interventions are equally critical to Levin and Meister's argument, and, as with cost estimates, changes in assumptions profoundly change the cost-effectiveness ratios. Levin and Meister have chosen two studies that they claim are representative of the effects of peer tutoring and CAI. For tutoring, they have chosen an undated, unpublished study of the Boise, Idaho, Tutoring Program. The unnamed authors of this evaluation apparently indicated that the program produced an effect size of .97 in mathematics – almost a full year's gain – and of .48 in reading – almost half a year's gain. The combined effect size is .73, or more than a seven-month gain in achievement.

But how representative is the Boise study? Would a seven-month gain in achievement be an average gain for a tutoring program? As 65 independent evaluations have shown, the average ef-

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TABLE 1.
Estimated Effects In Months

	Levin and Meister	Our Estimates
Peer Tutoring		
Mathematics	9.7	6.2
Reading	4.8	2.1
Combined	7.3	4.2
CAI		
Mathematics	1.2	5.4
Reading	2.3	4.2
Combined	1.8	4.8

TABLE 2.
Cost-Effectiveness Ratios

	Levin and Meister	Our Estimates
Peer Tutoring		
Mathematics	.46	.29
Reading	.23	.10
Combined	.35	.20
CAI		
Mathematics	.10	.45
Reading	.19	.35
Combined	.15	.40

Responding
communica
SSINI
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friendly
68
2
Leslie Cober

It appears that Levin and Meister overestimated the achievement gains of peer tutoring and underestimated those of CAI.

fect of tutoring programs is .40 in mathematics, or only a four-month gain.[1] However, only 15 of these 65 studies reported effects larger than .5. This suggests that the median, or typical, effect is substantially lower than .40. Fully 50 of the studies reported "small or trivial effects of tutoring."[2] This quantitative review indicated that the average effect sizes were .62 for mathematics tutoring and .21 for reading (see Table 1).

Levin and Meister's choice as a representative study of the effects of CAI is the Educational Testing Service/Los Angeles Unified School District's evaluation of the Computer Curriculum Corporation drill-and-practice program. This single report indicates that CAI increased mathematics achievement by about .12, or slightly more than one month; it increased reading achievement by about .23, or slightly more than two months. Although this study was well-documented, the authors evaluated only one form of CAI, produced by one company.

Are these effects typical of the research findings on CAI in general? A quantitative synthesis of 29 studies yielded an average CAI effect of .47, considerably higher than Levin and Meister's estimate based on a single study.[3] Our own estimate was .45, which we derived from 48 studies.[4]

Given these findings, it appears that Levin and Meister overestimated the achievement gains of peer tutoring and underestimated those of CAI. More broadly-based syntheses of the research on these interactions would yield more representative estimates of the effects of the interventions. But our estimates are derived from the findings of 110 studies, in contrast to the two used by Levin and Meister in deriving their estimate.

Table 2 shows cost-effectiveness ratios calculated using our estimates of the effects of CAI and peer tutoring and those of Levin and Meister. Their estimate of cost-effectiveness suggests that peer tutoring is more than twice as cost-effective as CAI. Ours yields the opposite conclusion. Using our figures, the cost-effectiveness ratio of CAI is .40 – twice the estimated effect of peer tutoring. Levin and Meister pose the question, Is CAI cost-effective? The answer is yes. Compared to peer tutoring, adult tutoring, increasing the length of the school day, and decreasing class size, an average CAI program produces the greatest gains per $100 of instructional expenditure. Of course, further increases in the effectiveness of CAI, reduced labor costs, and particular local conditions are likely to affect the estimates as well.

---

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Illustration by Leslie Cober

PHI DELTA
KAPPAN
SEPTEMBER 1986

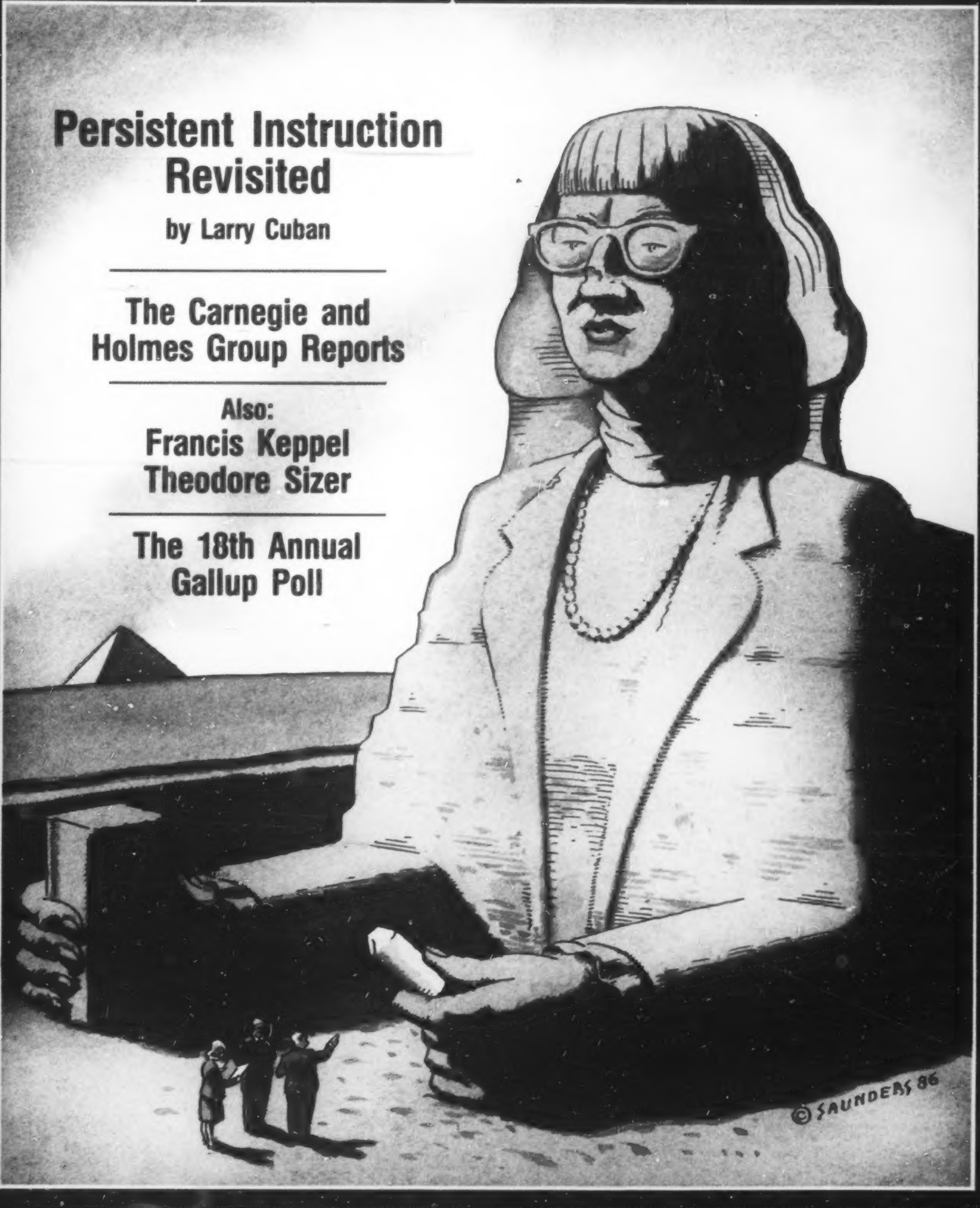
Persistent Instruction Revisited

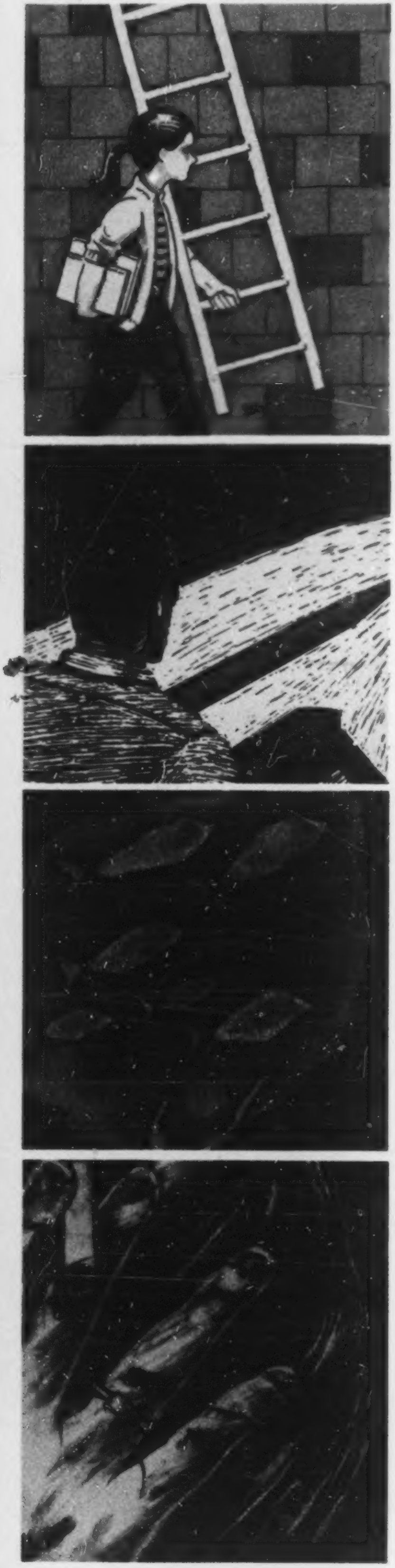
by Larry Cuban

The Carnegie and Holmes Group Reports

Also:
Francis Keppel
Theodore Sizer

The 18th Annual Gallup Poll





Phi Delta September 1986 • Volume 68 • Number 1

KAPPAN

FEATURES

7 **Persistent Instruction: Another Look at Constancy in the Classroom,** *by Larry Cuban*

12 **Keeping Track, Part 1: The Policy and Practice of Curriculum Inequality,** *by Jeannie Oakes*

18 **A Field Guide to the Land of Teachers,** *by Francis Keppel*

24 **The Carnegie Report – A Call for Redesigning the Schools,** *by Marc Tucker and David Mandel*

28 **Goals for the Reform of Teacher Education: An Executive Summary of the Holmes Group Report,** *prepared by Frank B. Murray*

32 **The Greater Challenge,** *by David G. Imig*

33 **A Risky Venture,** *by Howard D. Mehlinger*

36 **What the Holmes Group Report Doesn't Say,** *by Edward J. Nussel*

38 **Rebuilding: First Steps by the Coalition of Essential Schools,** *by Theodore R. Sizer*

43 **The 18th Annual Gallup Poll of the Public's Attitudes Toward the Public Schools,** *by Alec M. Gallup*

60 **In the Classroom Stoned,** *by Jessica Shannon*

63 **A Primer on Classroom Discipline: Principles Old and New,** *by Thomas R. McDaniel*

67 **Return from the Tower,** *by Mimi Warshaw*

69 **The Political Arithmetic of Cost-Effectiveness Analysis,** *by Henry M. Levin, Gene V Glass, and Gail Meister*

73 **Classroom Types,** *by Val Cheatham*

DEPARTMENTS

2 **THE EDITOR'S PAGE,** Tootie and Pops

3 **WASHINGTON REPORT,** *by Anne C. Lewis*

5 **STATELINE,** *by Chris Pipho*

74 **RESEARCH,** *by Gerald W. Bracey*

77 **DE JURE,** Supreme Court Confused by Reverse Discrimination, *by Thomas J. Flygare*

79 **PROTOTYPES,** A School District and a University Join Forces to Train Administrators, *by Ray Cross and Terry Littleton*

80 **BOOKS,** *Laurence D. Brown*

83 **NEWSNOTES**

92 **BACKTALK**

Cover Illustration: Rob Saunders

THE 18TH ANNUAL GALLUP POLL OF THE PUBLIC'S ATTITUDES TOWARD THE PUBLIC SCHOOLS

BY ALEC M. GALLUP

The annual Phi Delta Kappa/Gallup Poll of the Public's Attitudes Toward the Public Schools is a continuing source of reliable information concerning trends in opinion about significant school questions. For school officials, the poll is valuable in at least two ways: it alerts decision makers to overall public reaction to a variety of school programs and policies, and it serves as a national benchmark against which local attitudes can be measured.

Local officials are welcome to use questions asked in the PDK/Gallup surveys. The questions are not copyrighted. Moreover, no limits are placed on the

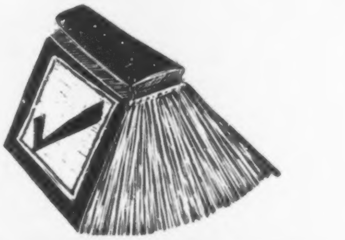
Poll illustrations by Claudia Tantillo

use of information contained in these reports, beyond customary credit to the source and observance of the canons of accuracy and completeness of quotation.

Phi Delta Kappa's Dissemination Division, assisted by the Gallup Organization, is prepared to help school districts and other agencies survey local populations on education questions. For details about this service, write or telephone Neville Robertson, director of the Center for the Dissemination of Innovative Programs, Phi Delta Kappa, P. O. Box 789, Bloomington, IN 47402. The phone number is 812/339-1156.

Questions for this year's poll were solicited from the 50 chief state school officers of the U.S., some 30 of whom responded. After their suggestions were summarized, the following panel rated their value for the benefit of the Gallup staff: Harold Blackburn, commissioner of education, Kansas; Gus A. Crenson, Director, Public Information and Publications, State Department of Education, Maryland; Robert L. Brunelle, Commissioner of Education, New Hampshire; Herbert J. Grover, State Superintendent of Schools, Wisconsin; Bill Honig, Superintendent of Public Instruction, California; Charles McDaniel, State Superintendent of Public Instruction, Georgia; Alice McDonald, Superintendent of Public Instruction, Kentucky; Tom McNeal, State Superintendent of Schools, West Virginia; and Margaret A. Smith, Secretary of Education, Pennsylvania. Myron Lieberman, now Professor of Education at the University of Pennsylvania, also critiqued the question summary.

— Stanley M. Elam, Coordinator
Phi Delta Kappa Opinion Polls



Most Important Problems Facing Local Public Schools in 1986

For the first time in this survey's 18-year history, the U.S. public has identified drug use by students as the most important problem facing the public schools. More than half of our respondents mention either drugs (28%) or discipline (24%), which was rated most important in 16 of the 1[illegible]ous polls. (In 1971 "lack of proper financial support" was considered the most important problem.) Our best-educated respondents — those with college degrees — continue to perceive discipline rather than drugs as the schools' most important problem. The margin is substantial, 30% to 18%. Other differences in perception by population groups are shown in the second chart below.

The question:

What do you think are the biggest problems with which the public schools in this community must deal?

	National Totals %	No Children In School %	Public School Parents %	Nonpublic School Parents %
Use of drugs	28	28	27	22
Lack of discipline	24	24	23	26
Lack of proper financial support	11	9	15	14
Poor curriculum/poor standards	8	7	10	11
Difficulty in getting good teachers	6	6	6	5
Moral standards/dress code	5	5	5	11
Drinking/alcoholism	5	4	5	8
Large schools/ overcrowding	5	4	6	5
Teachers' lack of interest	4	4	6	7
Lack of respect for teachers/other students	4	4	4	3
Parents' lack of interest	4	3	5	4
Low teacher pay	3	2	4	3
Integration/busing	3	4	3	3
Crime/vandalism	3	3	3	1
Pupils' lack of interest/ truancy	3	3	2	1
Problems with administration	2	2	3	5
Fighting	2	2	2	*
Mismanagement of funds/programs	1	1	1	3
Communication problems	1	1	1	3
Lack of needed teachers	1	1	1	2
Lack of proper facilities	1	1	1	2
Transportation	1	1	2	1
Teacher strikes	1	1	1	1
Too many schools/ declining enrollment	1	1	1	*
Parents' involvement in school activities	1	1	1	*
There are no problems	2	2	4	3
Miscellaneous	6	6	4	6
Don't know	11	13	4	5

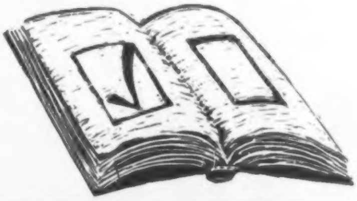
---

*Less than one-half of 1%.
(Figures add to more than 100% because of multiple answers.)

Differences in Problem Perception Among Population Groups

	Use of Drugs %	Lack of Discipline %
NATIONAL TOTALS	**28**	**24**
Sex		
Men	27	24
Women	29	23
Race		
White	27	24
Nonwhite	32	21
Age		
18 - 29 years	27	12
30 - 49 years	26	29
50 and over	31	29
Community Size		
1 million and over	26	23
500,000 - 999,999	34	24
50,000 - 499,999	29	23
2,500 - 49,999	31	23
Under 2,500	26	25
Central city	27	24

	Use of Drugs %	Lack of Discipline %
Education		
College	23	24
Graduate	18	30
Incomplete	26	20
High school	31	24
Graduate	28	25
Incomplete	39	22
Grade school	34	19
Income		
$40,000 and over	30	27
$30,000 - $39,999	19	29
$20,000 - $29,999	25	29
$10,000 - $19,999	31	22
Under $10,000	33	19
Region		
East	29	29
Midwest	27	22
South	28	24
West	27	20



Parents Distinguish Between 'Local Schools' and Schools Their Children Attend

As reported in previous studies, parents tend to be more positive about their children's schools than about the local schools as a group. Thus parents may regard drugs and discipline as problems in the local public schools but not in the school their oldest child attends. The difference favoring a child's school is 16% versus 27% for drugs and 15% versus 23% for discipline.

Drugs are perceived as a more serious problem by parents of high school children than by parents of elementary school children. Similarly, parents whose oldest children are either average or below average academically are somewhat more likely than other parents to see drugs as the most important problem facing the public schools.

The question:

What do you think are the biggest problems with which the school your oldest child attends must deal?

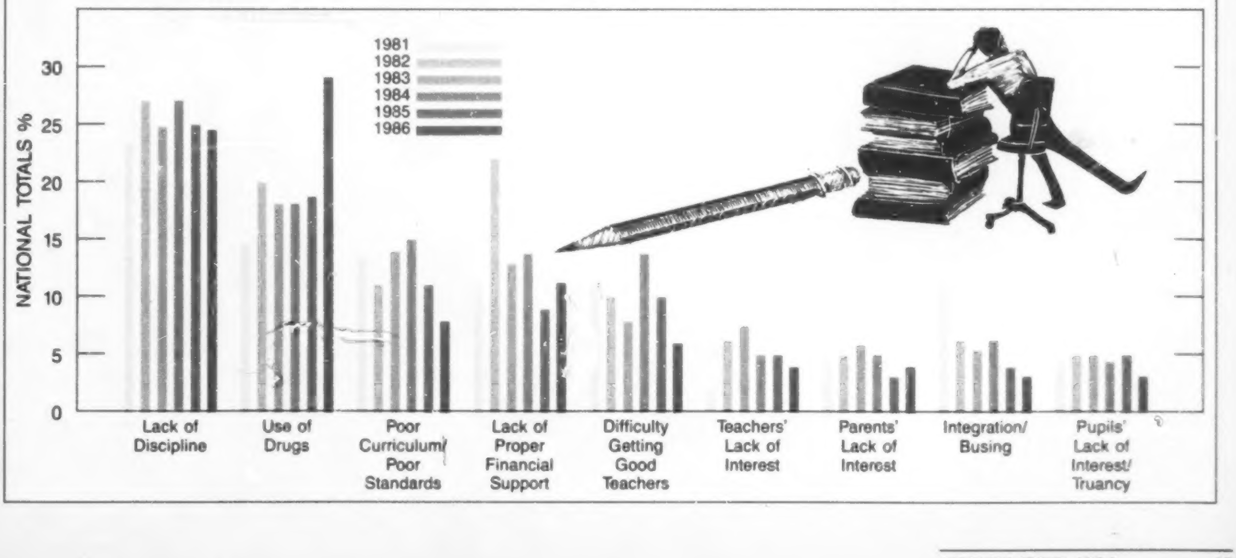
	School Own Child Attends %	Local Schools %
Use of drugs	16	27
Lack of discipline	15	23
Lack of proper financial support	9	15
Large schools/overcrowding	9	6
Poor curriculum/poor standards	7	10
Parents' lack of interest	4	5
Teachers' lack of interest	4	6
Moral standards/dress code	4	5
Difficulty in getting good teachers	3	6
Pupils' lack of interest/truancy	3	2
Drinking/alcoholism	3	5
Lack of needed teachers	3	1
Lack of respect for teachers/other students	3	4
Fighting	3	2
Parents' involvement in school activities	3	1
There are no problems	8	4
Miscellaneous	24	24
Don't know	12	4

(Figures add to more than 100% because of multiple answers.)

Support for Anti-Drug Measures In Local Schools

Survey respondents were asked to rate five measures for dealing with the drug problem in their local public schools. Nine in 10 support mandatory instruction in the dangers of

Biggest Problems Confronting the Public Schools, 1981-1986



drug abuse, roughly the same percentage who feel that education about the dangers of drug abuse should be a required course in the school curriculum (as reported in earlier studies). Eight in 10 favor the expulsion of students caught using drugs. Seven in 10 support using school funds to treat drug users, and the same proportion would permit school officials to search lockers when they suspect that drugs might be concealed in them. By a small majority (5-4), respondents even favor urinalysis to detect drug use.

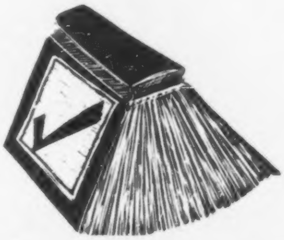
Support for each measure is virtually the same for parents and nonparents of schoolchildren. However, young people (under 30), while they are more likely to favor use of school funds to treat drug users than are their elders, are substantially less likely to support two of the more stringent measures: locker searches and urinalysis. Nonwhites are somewhat more likely to favor locker searches and substantially more likely to favor urinalysis than are whites, but they are less likely to favor expulsion of drug users from school.

College-educated and upper-income respondents are somewhat more likely to favor use of school funds for treating drug users than are their less-educated and less financially well-off counterparts.

The question:

> **This card lists various ways to deal with the problem of drugs in the public schools. As I read off each one of these plans, would you tell me whether you would favor or oppose its use in the public schools in your community?**

	National Totals %	No Children In School %	Public School Parents %	Nonpublic School Parents %
Requiring instruction for all students in the dangers of drug abuse.				
Favor	90	90	91	92
Oppose	6	6	6	5
Don't know	4	4	3	3
Permitting expulsion of students who are caught using drugs in school buildings or on school grounds.				
Favor	78	77	81	82
Oppose	16	16	14	17
Don't know	6	7	5	1
Use of school funds to provide counseling and treatment for students who use drugs.				
Favor	69	68	70	83
Oppose	25	26	24	16
Don't know	6	6	6	1
Permitting teachers or school authorities to search lockers or personal property if they suspect drugs, without obtaining a court-issued search warrant.				
Favor	67	67	67	77
Oppose	28	28	30	22
Don't know	5	5	3	1
Testing students for drug use by urinalysis.				
Favor	49	49	49	49
Oppose	44	44	43	46
Don't know	7	7	8	5



Grading the Public Schools And Their Teachers

The 1986 survey indicates that the public schools are perceived as favorably as in 1984 and 1985, when they achieved their highest performance grades since 1976. Forty-one percent of Americans rate the public schools locally (in "this community") as either A or B.

Similarly, 28% of the public give the public schools, *nationally*, either an A or B — the highest grade since this measurement was initiated in 1981.

Teachers receive an A or B from almost half of the public (48%), a figure statistically equivalent to last year's 49%, which represented the highest rating recorded since the measurement was initiated in 1981.

Administrators are graded A or B by about four in 10 members of the public (42%), a somewhat lower figure than last year's record 48% but higher than the low point of 36% recorded at the beginning of the Eighties.

Last year, for the first time, and again this year, public school parents were asked to grade the schools their oldest child attended, in addition to the local schools. This year's findings, like last year's, reveal the same phenomenon that arises in analyzing the grades awarded to the schools nationally, as compared to the schools locally — that is, the closer the contact, the more favorable the perception. Thus public school parents grade the public schools in their own community substantially higher than the public schools nationally, and they rate the public schools their own children attend even higher than the local schools. In the current survey, only 28% of parents give the public schools, nationally, an A or B; nearly twice as many (55%) give the local schools an A or B, and almost two-thirds (65%) give the schools their children attend one of the top two grades.

The question:

> **Students are often given the grades A,B,C,D, and FAIL to denote the quality of their work. Suppose the *public* schools themselves, in this community, were graded in the same way. What grade would you give the public schools here — A,B,C,D, or FAIL?**

	1986 National Totals %	No Children In School %	Public School Parents %	Nonpublic School Parents %
A + B	41	36	55	40
A	11	8	18	11
B	30	28	37	29
C	28	27	29	29
D	11	11	11	16
FAIL	5	5	4	11
Don't know	15	21	1	4

	A + B %	A %	B %	C %	D %	FAIL %	Don't Know %
NATIONAL TOTALS	**41**	**11**	**30**	**28**	**11**	**5**	**15**
Sex							
Men	41	10	31	31	10	5	13
Women	42	12	30	26	12	4	16
Race							
White	42	11	31	28	10	5	15
Nonwhite	37	10	27	30	18	5	10
Age							
18 - 29 years	35	5	30	35	14	4	12
30 - 49 years	45	14	31	30	11	5	9
50 and over	42	12	30	20	9	6	23
Community Size							
1 million and over	38	10	28	27	14	6	15
500,000 - 999,999	36	6	30	30	13	4	17
50,000 - 499,999	39	8	31	27	12	4	18
2,500 - 49,999	46	12	34	32	8	5	9
Under 2,500	46	14	32	27	8	4	15
Central city	29	4	25	31	18	7	15
Education							
College	45	10	35	29	10	4	12
Graduate	51	12	39	28	7	4	10
Incomplete	40	9	31	30	12	5	13
High school	38	10	28	29	12	5	16
Graduate	39	12	27	29	13	4	15
Incomplete	35	5	30	30	10	7	18
Grade school	41	16	25	16	12	6	25
Income							
$40,000 and over	54	13	41	27	9	3	7
$30,000 - $39,999	39	13	26	34	12	3	12
$20,000 - $29,999	41	10	31	33	8	6	12
$10,000 - $19,999	40	9	31	25	14	4	17
Under $10,000	35	10	25	25	9	7	24
Region							
East	39	9	30	26	11	5	19
Midwest	42	11	31	29	11	4	14
South	45	12	33	28	11	5	11
West	37	10	27	30	12	5	16

National Ratings

The public's rating of the schools nationally has climbed steadily since the first measurement in 1981, from 20% A or B, recorded at that time, to the high point of 28% registered this year.

The question:

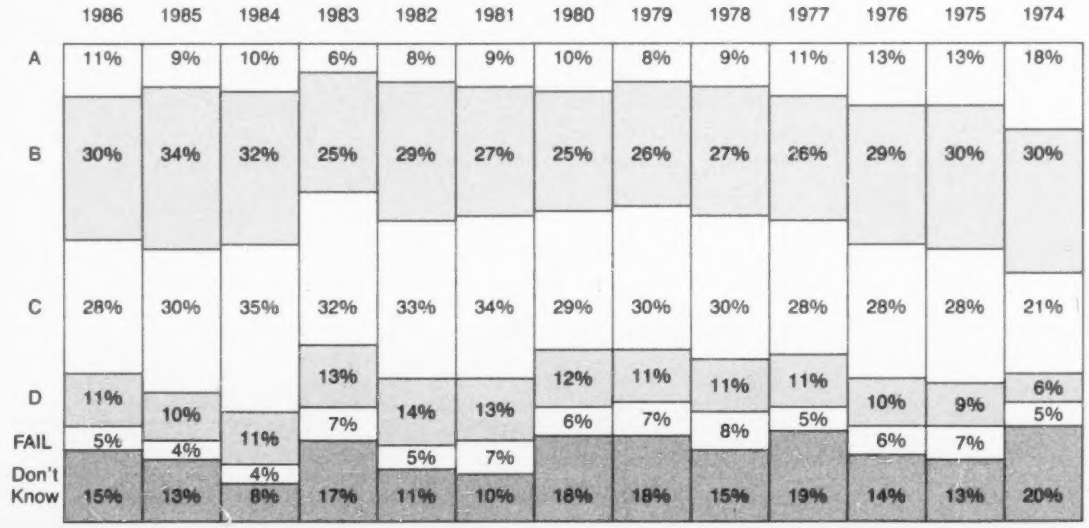
How about the public schools in the nation as a whole? What grade would you give the public schools nationally — A,B,C,D, or FAIL?

NATIONAL TOTALS	1986 %	1985 %	1984 %	1983 %	1982 %	1981 %
A + B	28	27	25	19	22	20
A	3	3	2	2	2	2
B	25	24	23	17	20	18
C	41	43	49	38	44	43
D	10	12	11	16	15	15
FAIL	5	3	4	6	4	6
Don't know	16	15	11	21	15	16

Grading School Oldest Child Attends

Almost two-thirds of parents (65%) give the school their oldest child attends an A or B. Only 26% give the school a

Ratings Given the Local Public Schools



grade of C and 6% a D or Failing grade. If their child's academic performance is above average, almost three-quarters of parents (73%) grade their school A or B. Even among parents of average or below-average students, nearly six in 10 (59%) give their children's school one of the two top grades.

The question:

Using the A,B,C,D, FAIL scale again, what grade would you give the school your oldest child attends?

Public School Parents	A+B %	A %	B %	C %	D %	FAIL %	Don't Know %
TOTAL	65	28	37	26	4	2	3

Respondents were asked to rate teachers and administrators on the same A-F scale as the schools. These ratings correspond roughly with school ratings. The summary table below provides overall percentages.*

	How Americans Grade Public School Education A+B		
	Public School Parents %	U.S. Public %	No Children In School %
Public Schools			
Nationally	28	28	28
Locally (all schools in community)	55	41	36
That oldest child attends	65	–	–
Where child receives above-average grades	73	–	–
Public School Teachers			
In local schools	60	48	43
In school oldest child attends	65	–	–
Where child receives above-average grades	77	–	–
Public School Principals And Administrators			
In local schools	56	42	38
In school oldest child attends	63	–	–
Where child receives above-average grades	70	–	–

Rating the Schools on Success Characteristics

Good schools should have the following characteristics, according to a consensus of educational researchers.

A. The school's environment should be safe and orderly.

B. The school's principal should spend most of his or her time helping teachers improve their teaching.

C. School administrators and teachers should have high expectations of students and demand high achievement.

D. General agreement should exist among administrators, teachers, and parents about school goals.

E. Student progress toward school goals should be regularly measured and reported.

Public school parents were asked to judge how accurately each of the above statements describes the school their oldest child attends: very accurately, fairly accurately, not very accurately, or not at all accurately. The findings are encouraging to educators. About eight in 10 parents believe statements A and E apply very accurately or fairly accurately. About seven in 10 believe the same about statements C and D. About half believe statement B applies very accurately or fairly accurately.

Ironically, though many public school parents perceive drugs and discipline as major problems in the schools their children attend, the vast majority (85%) feel that these schools are either "very" or "fairly" safe and orderly.

The question:

This card lists some of the characteristics of good schools. As I read off each item by letter, would you tell me how accurately you feel it describes the school your oldest child attends — very accurately, fairly accurately, not very accurately, or not at all accurately?

	Combined Very Accurately/ Fairly Accurately %	Very Accurately %	Fairly Accurately %	Not Very Accurately %	Not at All Accurately %	Don't Know %
A. Safe, orderly school environment	84	40	44	10	2	4
E. Student progress measured, reported	80	41	39	9	5	6
C. Staff has high expectations, demands achievement	74	33	41	16	3	7
D. Staff, parents agree on school goals	70	31	39	14	6	10
B. Principal helps teachers	54	17	37	18	8	20

Analysis of the "very accurate" responses among various groups in the parent population generally reveals very little difference, but there were some exceptions. Parents whose children are above average academically are somewhat more likely to state that each of these statements very accurately describes their school than do those parents whose children are average or below average. Parents whose oldest child is in elementary school are substantially more likely to say that the school is safe and orderly than are those whose oldest child is in high school.

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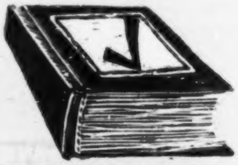
*To secure the complete Gallup report for 1986, see directions on page 59.



The Goals of Education

Asked what they consider the chief reasons why people want their children to get an education, Americans tend to mention job- and finance-related reasons first. For example, about one-third (34%) cite job opportunities, 8% say to get a better-paying job, 4% say to obtain specialized training, and 9% say to achieve financial security.

Relatively few Americans mention preparation for life (23%), to acquire knowledge (10%), to become a better citizen (6%), to learn how to get along with others (4%), or to contribute to society (3%).

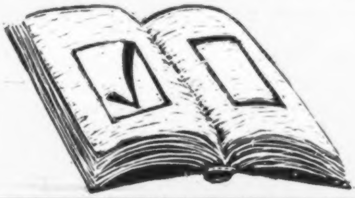
Furthermore, nonparents respond in virtually the same way as parents with children in the public schools.

The question:

People have different reasons why they want their children to get an education. What are the chief reasons that come to your mind?

	National Totals %	No Children In School %	Public School Parents %	Nonpublic School Parents %
Job opportunities/ better job	34	35	33	18
Preparation for life/ better life	23	22	25	33
Education is a necessity of life	12	12	12	10
More knowledge	10	10	10	11
Financial security/economic stability	9	8	11	13
To get a better-paying job	8	9	5	2
To become better citizens	6	6	6	5
For a successful life	5	4	7	6
To learn how to get along with people	4	4	3	1
For better/easier life than parents	4	2	7	3
Specialized training profession	4	3	4	9
Teaches person to think/learn/understand	3	3	3	8
To contribute to society	3	3	4	4
Personal development/ self-realization	3	3	4	3
To become self-sufficient (independence)	3	3	4	3
To learn basic skills/ fundamental learning skills	3	3	3	1
To develop the ability to deal with adult responsibilities	2	2	3	5
For happy/happier life	2	2	2	5
Creates opportunities/ opens doors	2	2	2	2
To develop an understanding and appreciation for culture	1	2	1	2
Helps keep children out of trouble	1	1	1	3
Social status	1	1	1	2
To develop self-discipline	1	1	1	1
To develop basic individual values	1	*	1	1
To develop critical thinking skills	1	1	*	1
Miscellaneous	2	2	1	3
Don't know	4	5	3	3

*Less than one-half of 1%.
(Figures add to more than 100% because of multiple answers.)



Attitudes Toward Federal, State, Local Influence on Public Education

This survey reveals that there is substantial support (57% to 17%) for more influence on public schools from local school boards, moderate support (45% to 32%) for more influence on the part of the state governments, and strong opposition to more federal influence on the way the public schools are run. The current 2-1 opposition to more federal influence (53% to 26%) is virtually the same as that recorded when the question was last asked in 1982, after the Reagan Administration took office.

Parents and nonparents have similar attitudes on these matters. Parents, however, are even more likely than nonparents to oppose increased federal influence. At the same time, they are somewhat more likely than nonparents to favor both increased influence by local school boards and by the state government.

Various population groups rather consistently support increased influence for local school boards, but some differences emerge on the question of increased control by state and federal government. Younger people and nonwhites are more likely than others to favor it. On the other hand, better-educated and higher-income segments of the population are more likely to favor less influence on the part of either the state governments or the federal government than are their less well-educated and less well-off counterparts.

The question on federal influence:

Thinking about the future, would you like the federal government in Washington to have more influence, or less influence, in determining the educational program of the local public schools?

NATIONAL TOTALS	1986 %	1982 %
More influence	26	28
Less influence	53	54
Same as now	12	10
Don't know	9	8

The question on state influence:

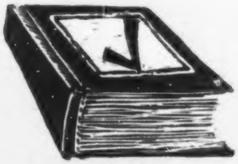
How about the state government? Would you like the state government to have more influence, or less influence, in determining the educational program of the local public schools?

	National Totals %	No Children In School %	Public School Parents %	Nonpublic School Parents %
More influence	45	46	45	35
Less influence	32	29	38	38
Same as now	16	16	13	20
Don't know	7	9	4	7

The question on local influence:

How about the local school board? Would you like the local school board to have more influence, or less influence, in determining the educational program of the local public schools?

	National Totals %	No Children In School %	Public School Parents %	Nonpublic School Parents %
More influence	57	56	61	55
Less influence	17	17	15	19
Same as now	17	16	19	19
Don't know	9	11	5	7



Financing the Public Schools

This survey reveals that 33% of Americans feel that the best way to finance the public schools is by means of state taxes. However, almost as many prefer federal taxes or local property taxes (24% in both instances).

It is instructive to relate what the public feels is the best source of funding for education — federal, state, or local taxes — to its views on which of the three divisions of government should have more influence on education policy. While the public disapproves of increased influence on the part of the federal government by a substantial margin, it is by no means opposed to accepting federal tax money.

The mild public preference for state taxes supports the revolution in school funding that began in the Seventies. Today, state sources generally yield more money for public schools than do local taxing units, though there are great variations among the states.

Despite the public's professed desire for better schools, resistance to increased local taxes for improving public education persists; only about one-third (37%) of Americans would be willing to pay more taxes should local school authorities say they are needed. This is roughly the same percentage as reported in these surveys over the past 15 years.

Resistance to increased taxes also surfaces when Americans are asked specifically whether they would favor or oppose increased property taxes or federal income taxes to improve public education. Only one-third would be willing to pay more property taxes, and only one-fourth would increase income taxes. In fact, as answers to our last finance question show, the only support for increases comes for taxes on alcohol and cigarettes and an increased percentage of the take from state lotteries, now held in 23 states.

The question on preferred ways of financing schools:

There is always a lot of discussion about the best way to finance the public schools. Which do you think is the best way to finance the public schools: by means of local property taxes, by state taxes, or by taxes from the federal government in Washington?

	National Totals %	No Children In School %	Public School Parents %	Nonpublic School Parents %
Local property taxes	24	22	28	22
State taxes	33	34	32	36
Taxes from federal government	24	23	28	22
Don't know	19	21	12	20

The questions on knowledge of actual sources of public school support:

Now, where do you think most of the funds to finance the public schools come from: from local property taxes, from state taxes, or from the federal government in Washington? And what do you think is the second largest source?

	National Totals %		No Children In School %		Public School Parents %		Nonpublic School Parents %	
	Largest source	Second largest source	Largest source	Second largest source	Largest source	Second largest source	Largest source	Second largest source
Local property taxes	45	19	44	19	44	19	46	23
State taxes	30	42	30	43	31	39	38	34
Taxes from federal government	11	22	10	20	14	26	4	19
Don't know	14	17	16	18	11	16	14	24

The question on voting to raise taxes for school support:

Suppose the local public schools said they needed much more money. As you feel at this time, would you vote to raise taxes for this purpose, or would you vote against raising taxes for this purpose?

	National Totals %	No Children in School %	Public School Parents %	Nonpublic School Parents %
For raise in taxes	37	34	45	38
Against raise in taxes	52	54	46	51
No opinion	11	12	9	11

Financial Support of the Public Schools

	Favor Raising Taxes %	Opposed to Raising Taxes %	Don't Know %
1986 survey	37	52	11
1985 survey	38	52	10
1984 survey	41	47	12
1983 survey	39	52	9
1981 survey	30	60	10
1972 survey	36	56	8
1971 survey	40	52	8
1970 survey	37	56	7
1969 survey	45	49	6

The question on preferred type of tax for school support:

Many states have recently passed school improvement legislation that requires additional financial expenditures. If your state needed to raise more money for the public schools, would you vote for or against the following proposals?

	National Totals %	No Children In School %	Public School Parents %	Nonpublic School Parents %
Increased alcoholic beverage taxes?				
Favor	79	78	82	79
Oppose	18	18	17	20
Don't know	3	4	1	1
Increasing the percentage of state lottery money that goes to support public schools in those states with a state lottery?				
Favor	78	77	81	69
Oppose	10	9	12	22
Don't know	12	14	7	9
Increased cigarette and tobacco taxes?				
Favor	74	74	74	79
Oppose	22	21	25	20
Don't know	4	5	1	1
Increased local property taxes?				
Favor	33	31	39	31
Oppose	60	61	56	63
Don't know	7	8	5	6
Increased gasoline taxes?				
Favor	28	28	29	29
Oppose	67	67	68	70
Don't know	5	5	3	1
Increased income taxes?				
Favor	27	25	31	26
Oppose	66	67	65	68
Don't know	7	8	4	6

Attitudes About AIDS

Two-thirds of the public would permit their children to attend school with a student who has AIDS. Perhaps surprisingly, the latest Gallup survey not only found an extraordinarily high level of public awareness of the disease (98%) but a very small proportion (6%) of the public who mistakenly believe that a person can contract AIDS merely by being in a public place with someone who has it.

The findings for this question only are based on telephone interviews with 1,004 adults, age 18 and older, conducted in scientifically selected localities across the U.S. during the period of 7-10 March 1986.

Only one-sixth (17%) of those who would *not* allow their children to attend classes with an AIDS victim believe that the disease can be transmitted by casual social contact, while 59% of this group voice the opposite opinion and 24% are undecided.

Although substantial majorities in all key population groups believe correctly that AIDS cannot be contracted by casual contact, this feeling is somewhat less prevalent — and uncertainty is more prevalent — among older, less-well-educated, and less-affluent people. Similarly, persons from these groups (which are highly interrelated) are less likely than their counterparts to say that they would permit their children to attend classes with a child who has AIDS.

This question was asked first: "Have you heard or read about the disease called AIDS — Acquired Immune Deficiency Syndrome?" Those who answered yes — an overwhelming 98% of the public — were then asked the following questions.

The first question:

Do you believe a person can get AIDS by being in a crowded place with someone who has it?

Casual Transmission of AIDS
(Based on aware group)

	Can Be Transmitted %	Cannot Be %	Not Sure %
NATIONAL TOTALS	6	81	13
Sex			
Men	7	79	14
Women	4	83	13
Race			
White	5	82	13
Nonwhite	10	79	11
Age			
18 - 29 years	8	86	6
30 - 49 years	5	86	9
50 and over	5	73	22
Education			
College graduates	2	91	7
College incomplete	5	87	8
High school graduates	5	82	13
High school incomplete	11	62	27
Region			
East	3	86	11
Midwest	6	81	13
South	6	77	17
West	6	83	11

The second question:

A 14-year-old Indiana boy who contracted AIDS through a contaminated blood transfusion was banned from attending school classes. After a county medical officer ruled that he posed no health threat to his classmates, he went back to school, but the parents of almost half of the students at his school kept their children home.

If you had children of this age, would you permit them to attend classes with a child who had AIDS, or not?

	Permit Child to Attend School With AIDS Victim? (Based on aware group)		
	Yes %	No %	Not Sure %
NATIONAL TOTALS	67	24	9
Sex			
Men	66	27	7
Women	67	22	11
Race			
White	67	24	9
Nonwhite	64	27	9
Age			
18 - 29 years	64	29	7
30 - 49 years	69	23	8
50 and over	65	23	12
Education			
College graduates	72	19	9
College incomplete	68	23	9
High school graduates	68	23	9
High school incomplete	57	35	8
Region			
East	64	27	9
Midwest	69	20	11
South	63	27	10
West	72	22	6

Support for Stricter Grade Promotion/ High School Graduation Requirements

To ascertain how the public feels about toughening requirements for grade promotion and for high school graduation, as has been recommended in national education reports, respondents were asked a series of questions. Those who supported stricter graduation requirements were asked whether they would do so if it meant that substantially fewer students would graduate. Finally, respondents were asked which of three proposals they preferred for dealing with those students who could not meet graduation requirements.

The survey reveals that Americans strongly favor stricter requirements for both grade promotion and high school graduation, and by virtually identical margins: 72% to 6% and 70% to 5%. These findings correspond closely with the public's support for testing to determine both grade promotion and high school graduation, as revealed in earlier surveys in this series.

The first question:

In your opinion, should promotion from grade to grade in the public schools be made more strict than it is now or less strict?

	National Totals %	No Children In School %	Public School Parents %	Nonpublic School Parents %
More strict	72	72	70	73
Less strict	6	5	7	6
Same as now	16	15	20	16
Don't know	6	8	3	5

The second question:

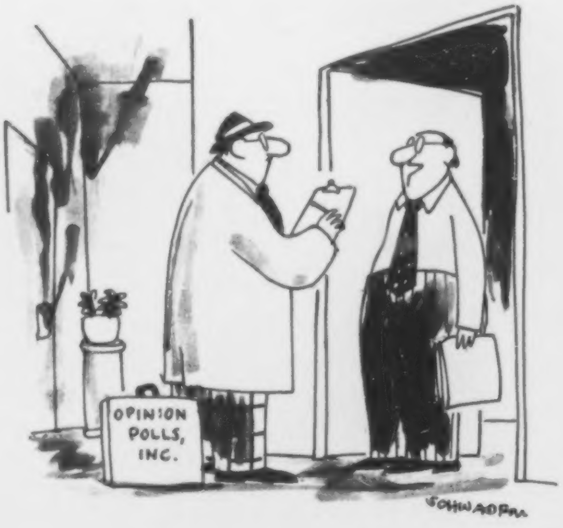
In your opinion, should the requirements for graduation from the public high schools be made more strict than they are now or less strict?

	National Totals %	No Children In School %	Public School Parents %	Nonpublic School Parents %
More strict	70	71	68	75
Less strict	5	5	7	*
Same as now	19	17	23	20
Don't know	6	7	2	5

*Less than one-half of 1%.

The third question:

Would you favor stricter requirements for high school graduation even if it meant that significantly fewer students would graduate than is now the case?



"Ideologically, I guess you could say I'm a hypocrite."

	National Totals %	No Children In School %	Public School Parents %	Nonpublic School Parents %
Yes	68	68	68	77
No	23	22	26	18
Don't know	9	10	6	5

Groups most in favor of stricter standards for graduation are the college-educated, those in the highest-income households (i.e., $30,000 or over), and residents of the nation's largest cities (i.e., 1 million or more).

Among groups in the parent population, it is the college-educated and those whose children are above average academically who are most supportive of stricter requirements.

The final question in this series:

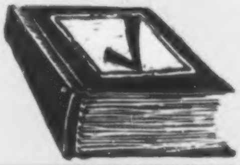
This card lists several ways to deal with those students who do not meet the requirements for public high school graduation. Which one of these plans would you prefer?

	National Totals %	No Children In School %	Public School Parents %	Nonpublic School Parents %
Have the high schools set up a remedial program for helping students who initially failed to meet the requirements for high school graduation to satisfy these requirements. This program would be supported by taxes.	45	44	45	53
Have high schools set up a remedial program for helping those students who initially failed to meet the requirements for high school graduation to satisfy these requirements. Students would be charged tuition to enter this program.	27	27	30	23
Have the high schools award more than one kind of diploma so that if a student cannot meet the requirements for a standard diploma, he or she would still be awarded a lesser diploma.	19	19	19	16
Don't know	9	10	6	8

Two of the proposals above involve remedial programs to help failing students to meet graduation requirements: one supported by taxes and the other paid for by student tuition. The third proposal calls for awarding a different diploma to those who do not meet the requirements of the standard diploma.

Note that almost three-quarters of Americans (72%) would opt for one of the two remedial programs. Support for the free, tax-supported proposal is preferred by a margin of almost 2-1 (45% to 27%) over the tuition proposal. Only one in five, however (19%), would choose proposal three, which would award a lesser degree to those who could not meet the requirements for the standard degree.

Attitudes toward the three proposals are virtually the same among parents of public school children and nonparents, as well as among the various groups in the total national population.



Support for National Testing

Not only have Americans consistently favored mandatory testing for grade promotion and high school graduation, but they continue overwhelmingly to support the concept of national tests to permit comparisons of the performance of students in various communities.

In the current survey almost eight in 10 members of the public favor the concept of national testing, roughly the same level of support found in three previous surveys, conducted over a 15-year period. Interestingly, parents are just as likely to favor national testing of student performance as are nonparents.

Support for national testing approaches eight in 10 in virtually every population segment of the national population, with the single exception of those persons in households with annual incomes of less than $10,000, where the percentage in favor of testing falls below seven in 10 (67%).

The question:

Would you like to see the students in the local schools given national tests so that their educational achievement could be compared with students in other communities?

	National Totals %	No Children In School %	Public School Parents %	Nonpublic School Parents %
Yes	77	76	78	82
No	16	15	19	17
Don't know	7	9	3	1

NATIONAL TOTALS

	1986 %	1983 %	1971 %	1970 %
Yes	77	75	70	75
No	16	17	21	16
No opinion	7	8	9	9

Time Spent Helping on Homework

Survey respondents were asked to indicate about how many hours (if any) they spent helping their oldest child with his or her homework per week during the school year. Responses reveal some inconsistencies between professed attitudes and actual behavior.

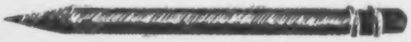
For two decades, the public has held the belief that children, in elementary school and in high school, do not work hard enough. They have felt that schoolchildren — particularly high school students — should be given *more* homework. Moreover, the great majority of parents say they require their children to spend time on homework on school nights.

On the other hand, judging by the number of hours that parents claim to help their children with homework during an average school week, parents seem less helpful than they might be. Fully one-third of parents say they do not spend *any* time assisting their children with homework and on average spend only about 1½ hours per *week*. This compares somewhat unfavorably with the 1½ hours per *day* they require their children to spend on homework.

The question:

> **During the school year, on average, about how many hours a week do you help your oldest child with his or her homework?**

	Public School Parents %
None	34
Up to 1 hour	13
1 - 1:59 hours	17
2 - 2:59 hours	10
3 - 3:59 hours	7
4 - 4:59 hours	5
5 - 5:59 hours	4
6 hours or more	5
Undesignated	5



Teachers: Testing, Salaries, Shortages

Pressing issues involving teachers were investigated in the current survey: the public's attitudes toward teacher competency tests, attitudes toward teacher salary levels, and views on strategies for attracting teachers in shortage areas such as math, science, and technical and vocational subjects.

As shown in three previous education surveys, there is overwhelming, across-the-board support for teacher competency testing. In the current survey, more than eight Americans in 10 favor such tests (85%), almost the identical percentage supporting the idea in 1979.

Interestingly, the level of support for competency tests is virtually the same as that for tests to prove teachers' knowledge *before* they are awarded a teaching certificate, as reported in the annual education surveys in 1979 and again in 1981.

The public still feels that teacher salaries are too low, an attitude revealed on numerous past surveys. In the current survey, 49% of the respondents favor a teacher salary figure higher than the salary they think teachers actually receive. In contrast, only 14% feel that teachers should receive *less* than they are thought to make. Specifically, the public thinks that beginning teachers, on average, receive $16,500 (which is close to the actual national average), but think they *deserve* to make almost $5,000 more, or $21,000.

On the subject of more pay for teachers in such shortage areas as math and science, the public continues to be roughly divided on the idea, 48% for to 44% against. This virtually matches the proportion of support found in 1984 but shows some decline in approval since a 1981 survey. There is strong support (83%) in favor of increasing the number of college scholarships for those who agree to become teachers in shortage areas. Only two in 10 respondents, however, favor relaxing teacher education and certification standards as a means of attracting teachers in these areas.

The teacher competency testing question:

> **In your opinion, should experienced teachers be periodically required to pass a statewide basic competency test in their subject area or areas or not?**

	National Totals %	No Children In School %	Public School Parents %	Nonpublic School Parents %
Yes, they should	85	84	87	87
No	11	11	11	13
Don't know	4	5	2	*

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*Less than one-half of 1%.

The questions on teacher salaries:

> **This card lists various income categories. What do you think the annual salary should be for a beginning public school teacher in this community with a bachelor's degree and teaching certificate?**
>
> **Now, what do you think the salary actually is in this community for a beginning teacher with a bachelor's degree and teaching certificate?**

Salary Categories	What People Think Beginning Teachers Should Be Paid %	What People Think Beginning Teachers Are Actually Paid %
Less than $10,000	3	3
$10,000 - $11,999	4	7
$12,000 - $13,999	6	12
$14,000 - $15,999	13	15
$16,000 - $17,999	12	16
$18,000 - $19,999	16	11
$20,000 - $24,999	19	6
$25,000 - $29,999	8	3
$30,000 and over	6	2
Don't know	13	25

Average salary deserved: $21,300
Median salary deserved: $19,500

The chart below treats these data in another way:

	National Totals %	No Children In School %	Public School Parents %	Nonpublic School Parents %
Deserve higher salary than perceived as being paid	49	47	55	56
Deserve lower salary than perceived as being paid	14	14	15	8
Deserve same salary as perceived	10	9	10	13
Don't know	27	30	20	23

Population groups most likely to feel that teachers are underpaid are college graduates, those in the highest income category, younger people, and those living in the center cities. For example, among persons in the over-$40,000 annual income category, 69% feel that teachers are underpaid compared to only 9% who say the opposite. Comparable figures for college graduates are 67% to 7%; for persons under 30, 58% to 16%; and for those living in the center cities, 57% to 14%.

There is one important regional difference: 44% of Western respondents think beginning teachers should be paid $20,000 or more. The comparable figure for the East is 29%, for the Midwest 31%, and for the South 31%.

The first question on teacher shortages:

> **Today there is a shortage of teachers in science, math, technical subjects, and vocational subjects. If your local schools needed teachers in these subjects, would you favor or oppose paying them higher wages than teachers of other subjects?**

	National Totals %	No Children In School %	Public School Parents %	Nonpublic School Parents %
Favor	48	48	48	54
Oppose	44	43	47	43
Don't know	8	9	5	3

	NATIONAL TOTALS 1986 %	 1984 %	 1981 %
Favor	48	48	50
Oppose	44	43	35
No opinion	8	9	15

The question on strategies for relieving shortages:

> **If your local schools needed teachers in science, math, technical subjects, and vocational subjects, would you favor or oppose these proposals?**

	National Totals %	No Children In School %	Public School Parents %	Nonpublic School Parents %
Increasing the number of scholarships to college students who agree to enter teacher training programs in these subjects?				
Favor	83	81	88	89
Oppose	11	11	9	11
Don't know	6	8	3	*
Relaxing teacher education and certification plans so more people could qualify to teach these subjects?				
Favor	18	18	19	31
Oppose	74	73	77	67
Don't know	8	9	4	2

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*Less than one-half of 1%.

When Should Children Begin School?

To find out what Americans consider the right age for children to start attending publicly supported schools, respondents to the 1986 survey were asked two sets of questions. The first set asked at which class level children should begin school, and since this would depend directly on the age of the child, the second set investigated the public's views on the appropriate starting age.

Specifically, respondents were asked whether tax-supported kindergarten should be made available to all parents who want it for their children. Then they were asked whether kindergarten should be made compulsory. The age questions sought to determine whether the public would favor or oppose starting school at age 4, a year earlier than is traditional, and, if this idea was rejected, what the public felt was the *right* age for children to begin school.

The findings reveal overwhelming support for making kindergarten available as a regular part of the public school system; eight in 10 respondents favor doing so. Almost as large a proportion (seven in 10) favor compulsory kindergarten.

On the other hand, the public opposes, by more than 2-1 (64% to 29%), having children start school at age 4. This finding reveals no attitude change since the early Seventies, when the same question was asked.

An important exception to the negative response to starting school at age 4 appears among nonwhites, however. A majority of nonwhites (55%) favor starting public school children at age 4; only about one-third (35%) oppose the idea.

The first question:

> **A proposal has been made to make kindergarten available for all those who wish it as part of the public school system. The program would be supported by taxes. Would you favor or oppose such a program in your school district?**

	National Totals %	No Children In School %	Public School Parents %	Nonpublic School Parents %
Favor	80	77	86	78
Oppose	13	14	10	12
Don't know	7	9	4	10

The second question:

Some educators have proposed that kindergarten be made compulsory for all children before entering first grade. Would you favor or oppose such a program in your school district?

	National Totals %	No Children In School %	Public School Parents %	Nonpublic School Parents %
Favor	71	68	80	80
Oppose	22	24	16	17
Don't know	7	8	4	3

The third question:

Some educators have proposed that young children start school a year earlier, at the age of 4. Does this sound like a good idea or not?

	National Totals %	No Children In School %	Public School Parents %	Nonpublic School Parents %
Yes, good idea	29	29	27	29
No	64	62	70	67
Don't know	7	9	3	4

	NATIONAL TOTALS		
	1986 %	1973 %	1972 %
Yes, good idea	29	30	30
No	64	64	64
Don't know	7	6	6

The final question:

At what age do you think children should start school?

	National Totals %	No Children In School %	Public School Parents %	Nonpublic School Parents %
4 years (or under)	29	29	27	29
5 years	41	40	44	42
6 years	18	18	20	23
7 years (or over)	2	1	2	*
No opinion	10	12	7	6

*Less than one-half of 1%.

The findings concerning what the public feels is the class level at which public school children should start school, cross-tabulated with the *age* at which they should begin, shows the following distribution of preferences:

	%
(Compulsory) Kindergarten at 5	34
(Compulsory) Kindergarten at 4	23
(Compulsory) Kindergarten at 6	10
(Compulsory) First grade at 6*	9
(Compulsory) First grade at 5	6
(Compulsory) First grade at 4	4
No opinion	14

*Most common arrangement.

The Right to Choose Children's School

Although two out of three parents (68%) would like to have the right to choose the local schools their children attend, relatively few — one in four — would take advantage of this right if it were available.

Interestingly, the percentage who would select a different school for their children (24%) corresponds roughly with the percentage of parents who rate their children's schools as either average or below average in performance (32%). Groups most in favor of the right to choose are women, parents of elementary school children, and those whose children are average or below average in academic standing.

The first question:

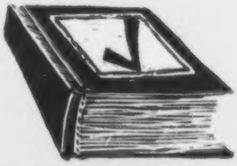
Do you wish you had the right to choose which public schools your children attend in this community?

Public School Parents	Yes %	No %	Don't Know %
TOTAL	68	25	7
Sex			
Men	62	33	5
Women	73	18	9
Education			
College	69	23	8
High school	67	28	5
Occupation			
White collar	64	27	9
Blue collar	69	25	6
Oldest Child Attends			
High school	65	28	7
Elementary school	72	23	5
Oldest Child's Class Standing			
Above average	66	29	5
Average or below	72	21	7

The second question:

If you could choose your children's schools among any of the public schools in this community, would you choose the ones they now attend or different ones?

Public School Parents	Same As Now %	Different Ones %	Don't Know %
TOTAL	**65**	**24**	**11**
Sex			
Men	76	14	10
Women	56	32	12
Education			
College	65	24	11
High school	68	23	9
Occupation			
White collar	63	26	11
Blue collar	70	22	8
Oldest Child Attends			
High school	62	28	10
Elementary school	70	21	9
Oldest Child's Class Standing			
Above average	72	20	8
Average or below	60	30	10



Private and Parochial Schools

American attitudes toward the nation's nonpublic schools — i.e., both the parochial and the independent or private schools — were investigated in the 1986 survey in the following areas:

- the public's support of or opposition to the use of government tax funds to help the nation's parochial schools — and correspondingly to assist the private or independent schools;
- public support of or opposition to the adoption of the voucher system in this country;
- parents' interest in sending their children to private or parochial schools, if they had the necessary means; and
- parents' acceptance or rejection of a specific voucher proposal that would provide $600 a year to enroll their children in any private, parochial, or public school.

Survey findings reveal that the public is opposed to providing tax money to parochial schools at about the same level as in 1981 and even more than when the question was first asked in 1971. The public is even more negative about giving tax money to support private or independent schools. Only about one-quarter (27%) feel that the government should provide funds for the nation's private schools.

Analysis of responses to both questions in the current survey shows the following distribution:

	%
Favor tax money for *both* parochial and private schools	24
Favor tax money for parochial schools *only*	16
Favor tax money for private schools *only*	3
Favor tax money for *neither* parochial nor private schools	55
Don't know	2

Americans' support for the general concept of vouchers is roughly divided, pro and con, as has been the case on the several occasions that the issue has been investigated in this series. Public school parents are roughly divided (49% to 46%) about the desirability of sending their children to a private or parochial school, assuming they had the means to do so.

Response to the specific $600 voucher proposal is generally negative. Only one-quarter of parents (27%) would use the $600 voucher for a parochial or private school; i.e., about half of those say they would like to send their children to a nonpublic school. Although 6% say they would move their children from their current public school to another school, it would be a public institution. More than six in 10 (61%), however, would keep their children in the public school they now attend.

Support for Tax Assistance for Parochial Schools

About four in 10 respondents (42%) support the idea of giving tax money to parochial schools, compared to five in 10 who oppose it. This is about the same division that was reported in the 1981 survey.

The current findings reveal somewhat more opposition than when the question was first asked, in 1970, however. At that time the public *supported* use of tax funds for parochial schools by a slim 48% to 44% margin. Parents of public school children are even more opposed to the idea of giving tax money to parochial schools than are nonparents.

This opposition is shared by most major population groups; the only exception is people living in the East, the region with a heavy concentration of Catholics. In the East, a majority (55%) favors giving tax money to parochial schools, compared to the 35% who oppose the idea.

The question:

> **It has been proposed that some government tax money be used to help parochial (church-related) schools make ends meet. How do you feel about this? Do you favor or oppose giving some government tax money to help parochial schools?**

	National Totals %	No Children In School %	Public School Parents %	Nonpublic School Parents %
Favor	42	42	40	57
Oppose	50	48	54	41
No opinion	8	10	6	2

	NATIONAL TOTALS		
	1986 %	1981 %	1970 %
Favor	42	40	48
Oppose	50	51	44
No opinion	8	9	8

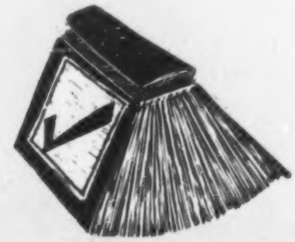
Support for Tax Assistance to Private Schools

Two out of three Americans (65%) are opposed to giving tax money to the nation's private schools, and this proportion holds among parents of public school children as well as nonparents. This strong opposition permeates every segment of the population, including people living in the East, with its relatively high concentration of Catholics.

The question:

How do you feel about private schools? Do you favor or oppose giving some government tax money to help *private schools*?

	National Totals %	No Children In School %	Public School Parents %	Nonpublic School Parents %
Favor	27	26	26	48
Oppose	65	66	67	50
No opinion	8	8	7	2



Interest in Sending Children To Private and Parochial Schools

Survey findings show the public to be divided — 49% for, 46% against — on the desirability of sending their children to a private or parochial school, even if they had the means. This split is characteristic of every major population group, with one exception. Women are much more likely (57% to 38%) to say they would send their children to a *parochial* school than men (39% to 56%).

A $600 voucher would persuade only about half of those parents interested in sending their children to a private or parochial school to do so. The $600 voucher would also have very little influence on parents sending a child to another *public* school: only 6% would move their children out of the schools they are currently attending to another public school.

The question:

If you had the means, would you send any of your children to a private or church-related school?

Public School Parents	Yes %	No %	Don't Know %
TOTAL	**49**	**46**	**5**
Sex			
Men	39	56	5
Women	57	38	5
Education			
College	47	47	6
High school	50	47	3
Occupation			
White collar	44	50	6
Blue collar	49	48	3
Oldest Child Attends			
High school	47	51	2
Elementary school	52	44	4
Oldest Child's Class Standing			
Above average	48	48	4
Average or below	51	46	3

Support for Vouchers

The same question about vouchers has been asked in this survey six times, beginning in 1970. Americans today support the voucher idea by a close 46% to 41% margin. This is a slight decline from its high point of approval in 1983, when the plan was favored by 51% of the public, while 38% opposed it.

Surprisingly, parents of public school children are only slightly more likely to favor the voucher system than are nonparents.

Although the public, collectively, approves of the voucher system by a narrow margin, majority support for its adoption emerges in certain population segments. Nonwhites favor adoption of the system by a wide margin (54% to 33%). Similarly, those under 30, Catholics, persons residing in the inner cities, and those who are dissatisfied with the performance of the public schools (i.e., give them a D or Failing grade) support the adoption of the voucher system by about a 5-3 margin.

The question:

In some nations the government allots a certain amount of money for each child for his education. The parents can send the child to any public, parochial, or private school they choose. This is called the "voucher system." Would you like to see such an idea adopted in this country?

	National Totals %	No Children In School %	Public School Parents %	Nonpublic School Parents %
Yes	46	44	51	64
No	41	41	41	28
No opinion	13	15	8	8

NATIONAL TOTALS

	1986 %	1985 %	1983 %	1981 %	1971 %	1970 %
Yes	46	45	51	43	38	43
No	41	40	38	41	44	46
No opinion	13	15	11	16	18	11

Further breakdowns:

	Yes %	No %	Don't Know %
NATIONAL TOTALS	**46**	**41**	**13**
Sex			
Men	46	44	10
Women	46	38	16
Race			
White	45	42	13
Nonwhite	54	33	13
Age			
18 - 29 years	55	30	15
30 - 49 years	48	41	11
50 and over	37	49	14
Community Size			
1 million and over	48	36	16
500,000 - 999,999	50	33	17
50,000 - 499,999	53	39	8

	Yes %	No %	Don't Know %
Community Size			
2,500 - 49,999	41	53	6
Under 2,500	39	46	15
Central city	52	34	14
Education			
College	44	46	10
Graduate	43	46	11
Incomplete	44	47	9
High school	49	37	14
Graduate	50	36	14
Incomplete	48	37	15
Grade school	40	36	24
Income			
$40,000 and over	51	42	7
$30,000 - $39,999	43	47	10
$20,000 - $29,999	48	41	11
$10,000 - $19,999	47	37	16
Under $10,000	45	38	17
Region			
East	55	32	13
Midwest	42	46	12
South	43	40	17
West	46	44	10

How a $600 Voucher Would Be Used

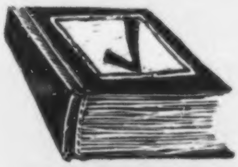
If public school parents were given a $600 voucher that could be used to enroll their children in *any* school — public, private, or parochial — about one-quarter of them would use it for a parochial school (14%) or for a private school (13%). Six percent would use the voucher for another public school, but the majority, 61%, would keep their children in their present public schools.

These views are shared equally among various parent population groups, with one exception. Women appear to be about twice as likely as men to use a $600 voucher to send their oldest child to a *parochial* school (19% to 9%).

The question:

> **Suppose the federal government gave you a voucher worth $600, which you could use to enroll your oldest child in *any* school — public, private, or church-related. Would you use the voucher to enroll the child in another public school, in a private school, a church-related school, or would you keep the child in the same school?**

Public School Parents	Other Public School %	Private School %	Church-Related School %	Keep Child In Same School %	Don't Know %
TOTAL	6	13	14	61	6
Sex					
Men	5	12	9	67	7
Women	7	14	19	55	5
Education					
College	5	10	16	63	6
High school	6	14	13	61	6
Occupation					
White collar	4	16	11	63	6
Blue collar	6	10	17	62	5
Oldest Child Attends					
High school	7	14	13	63	3
Elementary school	6	12	16	60	6
Oldest Child's Class Standing					
Above average	4	12	15	63	6
Average or below	9	15	14	60	2



Research Procedure

The Sample. The sample used in this survey embraced a total of 1,552 adults (18 years of age and older). It is described as a modified probability sample of the U.S. population. Personal, in-home interviewing was conducted in all areas of the nation and in all types of communities. A description of the sample and sample design is available from Phi Delta Kappa.

Time of Interviewing. The fieldwork for this study was carried out during the period of 11-20 April 1986.

The Report. The heading "Nonpublic School Parents" includes parents of students who attend parochial schools and parents of students who attend private or independent schools.

Due allowance must be made for statistical variation, especially in the case of findings for groups consisting of relatively few respondents, e.g., nonpublic school parents.

The findings of this report apply only to the U.S. as a whole and not to individual communities. Local surveys, using the same questions, can be conducted to determine how local areas compare with the national norm.

How to Order the Poll

Persons who wish to have a copy of the *complete* report of the 1986 Gallup/PDK education survey may secure one by writing to Phi Delta Kappa, enclosing $25 to cover all costs. The full report consists of 178 pages, with approximately three times as much information as could be included in this issue of the *Kappan*.

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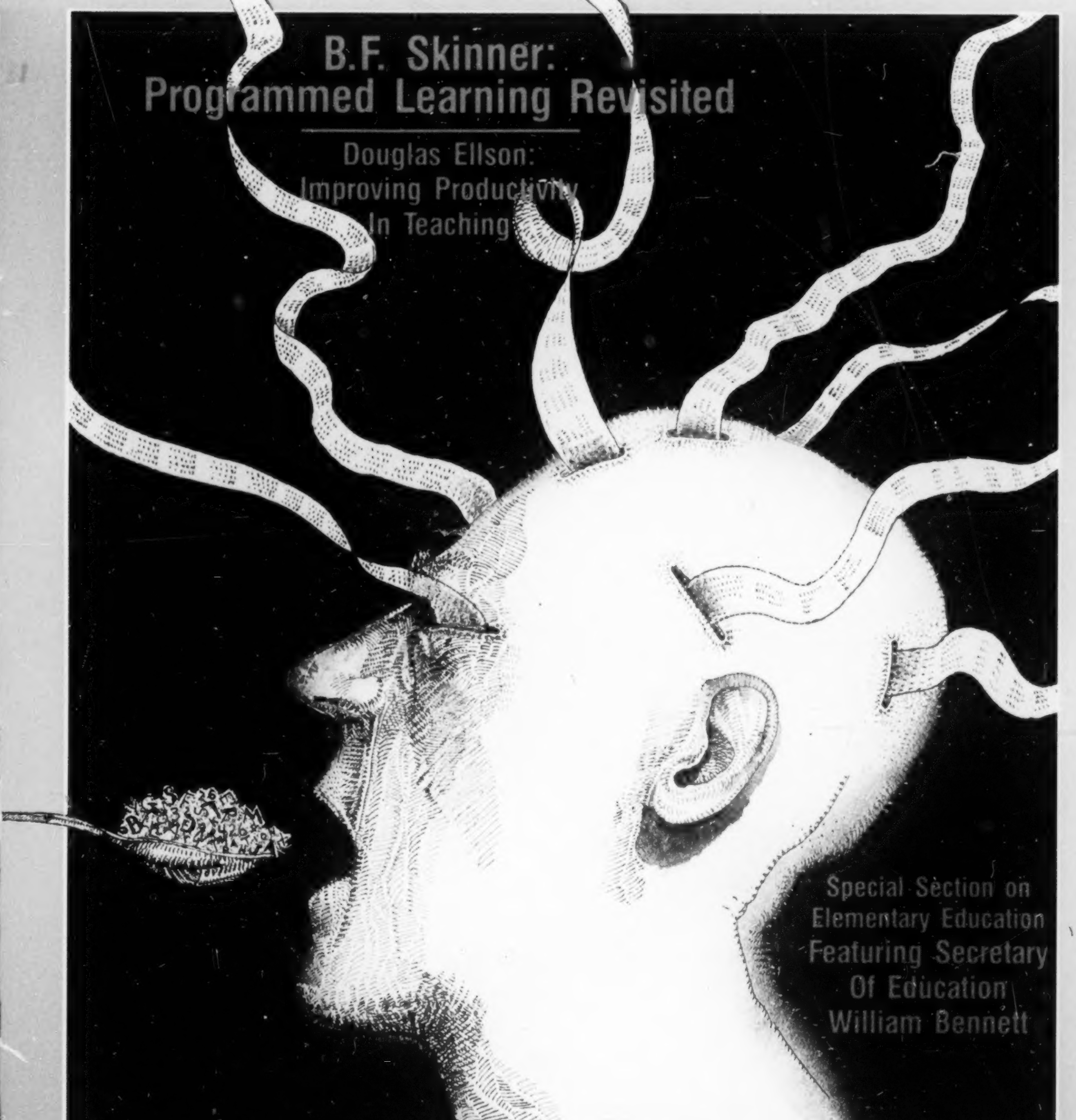
B.F. Skinner: Programmed Learning Revisited

Douglas Ellson: Improving Productivity In Teaching



Special Section on Elementary Education Featuring Secretary Of Education William Bennett

Phi Delta October 1986 • Volume 68 • Number 2

KAPPAN

FEATURES

103 **Programmed Instruction Revisited,** *by B.F. Skinner*

111 **Improving Productivity in Teaching,** *by Douglas Ellson*

125 **First Lessons,** *by William J. Bennett*

130 **•Good Questions,** *by Samuel G. Sava*

131 **•A Mixed Bag,** *by Albert Shanker*

133 **•Rich Learning for All Our Children,** *by Charles L. Glenn*

135 **The State of Instruction in Reading and Writing in U.S. Elementary Schools,** *by Archie Lapointe*

139 **New Lenses for Viewing Elementary Schools,** *by Allan Shedlin, Jr.*

143 **Huge Learning Jumps Show Potency of Brain-Based Instruction,** *by Charmaine Della Neve, Leslie A. Hart, and Edgar C. Thomas*

148 **Keeping Track, Part 2: Curriculum Inequality and School Reform,** *by Jeannie Oakes*

154 **Teaching the Bill of Rights,** *by William Wayne Justice*

158 **Ten Questions That Shook the Class,** *by Glenn Cunningham*

DEPARTMENTS

98 **THE EDITOR'S PAGE,** No Guarantees

99 **WASHINGTON REPORT,** *by Anne C. Lewis*

101 **STATELINE,** *by Chris Pipho*

161 **PEER,** An Interview with Robert Eaker, *by Willard Duckett*

165 **DE JURE,** Is *Tinker* Dead?, *by Thomas J. Flygare*

166 **PROTOTYPES,** Effective Inservice Training: Mission Impossible?, *by Marguerite M. Terrill, Sandra Strauber, and Henry Cone*

167 **BOOKS,** *Laurence D. Brown*

171 **NEWSNOTES**

174 **BACKTALK**

Cover Illustration: Alan E. Cober

Improving Productivity In Teaching

BY DOUGLAS ELLSON

The productivity of teaching can be improved, and research that has already been performed points the way, says Mr. Ellson in this important article. He summarizes 75 research studies – largely ignored by school and university establishments – that have the potential to change our practice.

THE NATIONAL Commission on Excellence in Education charged in 1983 that the U.S. educational system is less productive today than it was yesterday and that other industrialized nations have outstripped us in educational productivity.

The commission proposed five general solutions for this and other problems of education. But there were two important omissions from the commission's list. There was no recommendation concerning the *how* of teaching – i.e., the methods, techniques, or management of teaching – and there was scarcely any mention of the potential contribution of research and development to the improvement of teaching. These omissions would perhaps be justified if it were true that the only way to improve teaching is to improve the teachers by such administrative means as improving their salaries, selection, training, morale, and so on. But that is *not* true.

I have collected 75 research studies – largely ignored by school and university establishments – that report great differences in one or more quantitative indices of teaching productivity when two methods of teaching and/or two management systems are compared. In each comparison of two techniques, the common dependent variable is relative productivity or cost, i.e., the ratio of the effects of an experimental treatment and a comparison treatment that provides a baseline. Each study reports at least one difference in teaching productivity – teaching effectiveness, cost, efficiency, or cost-effectiveness – large enough to be educationally significant. To simplify and objectify the search process, I defined "large enough" as an improvement of 100% or more, i.e., as a difference represented by a relative productivity ratio (RPR) of 2.0 or more (the RPR$\geq$2 criterion). The 75 papers evaluate a total of 125 teaching techniques that satisfied the RPR$\geq$2 criterion for one or more indices of productivity.

THE CATEGORIES

In *Improving the Productivity of Teaching: 125 Exhibits*, a monograph to be published in the coming months by the Phi Delta Kappa Center on Evaluation, Development, and Research, I have systematically annotated 125 instances of teaching techniques that satisfied the RPR$\geq$2 criterion, grouping them in eight categories that reflect practical, technological, and instructional management characteristics. Of these, five represent variants of conventional instruction and three represent variants of programmed instruction.

Of 32 examples (26% of the total in the collection) of conventional instruction that satisfied the RPR$\geq$2 criterion, eight were examples of conventional teaching. In five of the eight cases, the conventional teaching procedure satisfied the criterion in one or more comparisons with another conventional teaching procedure, usually a control procedure. In one case the criterion was satisfied in comparison with an experimental variant of conventional teaching, and in two cases in comparison with a form of programmed learning.

The remaining 24 cases of conventional instruction that satisfied the RPR$\geq$2 criterion were experimental variants of four types.

- In eight examples, the defining common feature was a major augmentation of conventional teaching. The augmentation consisted of the addition or elaboration of a number of components of conventional teaching, made possible by the provision of special funds, personnel, teaching materials, physical facilities, and so on, that are not ordinarily available in public schools.
- In seven procedures, conventional

DOUGLAS ELLSON is professor emeritus of psychology, Indiana University, Bloomington. This article is an abridged version of a monograph, Improving the Productivity of Teaching: 125 Exhibits, *to be published by the PDK Center on Evaluation, Development, and Research. The author wishes to thank Karen Klein, John McGrew, and Holly Arpan for their contributions.*

teaching was supplemented with conventional teacher-directed tutoring conducted by students or nonprofessional personnel.

- Seven other procedures that met the criterion specified only special characteristics of the content that was taught.
- Finally, there were two relatively simple modifications of conventional teaching procedures. One of these[1] suggests a potential contribution to the art of teaching defined narrowly as the personal hands-on skill of a teacher. The other, Karnes' Community Integrated Procedure,[2] is perhaps better described as a contribution to the art of school administration. The interventions that made use of modifications of conventional teaching procedures and of the special characteristics of content, as well as some of the instances of nonprofessional tutoring, are distinguished from the augmentations of conventional teaching because they do not ordinarily require additional resources or paid personnel.

The remaining 93 examples (74% of the total in the collection) may be described as *non*conventional techniques in the sense that none are in common use in general education. All are products of a relatively new subprofession of education – namely, instructional systems design – that uses several relatively new psychotechnologies of teaching. In many cases, these techniques also make use of one or more physical technologies of education (e.g., print, broadcasting, audiovisual equipment, teaching machines, training devices, and computers) as teaching media.

Forty-three of the nonconventional cases are examples of programmed learning, a highly structured self-instructional psychotechnology of teaching that is often combined with physical forms of educational technology. Twenty-nine cases are examples of a more recently developed form of programmed instruction, programmed teaching. In this technology the teaching or tutoring activities of teachers – usually nonprofessionals – are ordinarily specified in detail in printed instructions (programs similar in function to the instructions that are an integral part of the programs given to the learners in programmed learning). Since the pupils are not required to read the instructions, programmed teaching is ordinarily better adapted than programmed learning to the teaching of beginning reading, and for this and other reasons it is better suited to the teaching of young children.

Twenty-one cases (17%) are examples of performance-based instruction or performance-based instructional design. These two closely related techniques, also developed by instructional designers, make use of explicit (as opposed to intuitive) information derived from comparisons of pupil performance with equally explicit instructional objectives. In performance-based instruction, this information, obtained in the process of instruction, is used immediately within the classroom as the primary basis for instructional decisions. In performance-based instructional design, similar information is obtained, but it is applied to the planning, design, and improvement of subsequent instruction.

The total number of comparisons in the collection that satisfy the $\text{RPR} \geq 2$ criterion is more than 500, averaging approximately four (different indices of productivity) for each exhibit. Of these, some 150 compared two procedures of the same general type, e.g., two conventional or two nonconventional procedures. In most of these, the difference in productivity favored the experimental rather than the control treatment. It is notable that in the remainder – some 350 comparisons of an example of programmed instruction with a conventional control – less than 5% favored the latter.

Conventional teaching is a generic name for teaching procedures that are generally acceptable and in common use. Because of the practice, common in reports of educational research, of omitting a description of or even a name for the method used to teach control or baseline groups, the generic term must remain essentially undefined. It is not a single method, of course; it is many. These methods differ from one another not only in subject and level taught but in characteristics of the community; characteristics or assumed characteristics of the pupils taught; characteristics of the teacher (with regard to background, training, and personality); and many other factors.

For purposes of this review, it will be useful to identify one characteristic that seems to be common to all forms of conventional teaching; it also distinguishes them from the less-conventional, chiefly programmed forms of instruction that are also part of the collection. Currently, conventional methods of teaching are teacher-centered to a very high degree. Most of the methods I classify as nonconventional are teacher-centered only to the extent that the teacher, rather than an administrator or the public, makes the very important decision to use or not to use them and that the teacher implements or supervises their use and serves as troubleshooter.

In conventional forms of instruction the teacher – and, in the case of conventional tutoring, the tutor – is almost entirely responsible for determining how the teaching is done. To a lesser extent, the teacher or tutor is responsible for choosing texts and other teaching materials and for deciding what is to be taught from or with them – that is, for choosing curricular and instructional objectives. In the forms of instruction that I have identified as nonconventional – namely, programmed learning, programmed teaching and tutoring, and, to a lesser extent, partially programmed

"I march to a different drummer . . . a dumb drummer."

instruction – detailed decisions concerning both teaching procedures and content are ordinarily made by instructional systems designers rather than by classroom teachers.

The four categories of conventional instruction that follow may be described as variants of conventional teaching.

In conventional forms of instruction, the teacher (or the tutor) is almost entirely responsible for determining how the teaching is done.

With a few exceptions, the experimental variants of conventional teaching in the collection are considerably more effective than the unmodified forms of conventional teaching that were chosen as control treatments.

Augmented Conventional Teaching uses complex methods that incorporate additional resources: funds, paid personnel, special equipment and teaching materials, and so on. These resources make the work of teachers who continue to use conventional methods easier. This result is achieved by increasing instructional time; by increasing individualization; by reducing class size or teaching loads; by enabling teachers to delegate teaching and nonteaching responsibilities to other teachers or to professional specialists, nonprofessional aides, or tutors; by using additional teaching materials and equipment; by modifying content; by increasing the salaries of teachers; by improving the morale, quality, or qualifications of teachers; and so on.

Basically, augmented conventional teaching is a quantitative modification of conventional teaching. It makes increased use of certain (often many) well-known components of conventional teaching that have long been assumed to improve teaching effectiveness but are not generally used because of traditionally austere school budgets.

Differences between methods of augmented conventional teaching are at least as great as their similarities. Therefore, I will characterize them individually below, chiefly by quoting descriptive phrases from their proponents.

- College-Bound Project Method.[3] Intensive instruction in mathematics and English in classes of 16-20 students, with two periods of English; programmed instruction; individual and group counseling aid in study and work habits; library skills instruction; the use of college students as educational assistants to help provide individual instruction; the use of supervisors to develop the curriculum and work closely with the teachers and educational assistants; books; rich reading experience; speakers from the fields of higher education and business; homogeneous grouping; and so on.
- Fernald Method.[4] Individualization of instruction; permissive atmosphere; broad, individual instructional program; specific learning goals established for each child to permit success in a learning task that has previously yielded consistent failure; improvement positively reinforced; nonpunitive learning environment; particular effort to exclude kinds of negative reinforcers and criticism that tend to lead to self-devaluation and feelings of incompetence; videotape recorders; videotaped play; closed-circuit television; a wide range of commercial and teacher-made materials; classrooms limited to a maximum of 19 students; a student-to-adult ratio of about 4:1; a group of mature and dedicated university students participating in familial and social interactions and in various therapeutic and educational programs far beyond those required to meet student needs and obligations.
- R-3 Program.[5] A motivational program emphasizing student readiness and learning reinforcement through individualized instruction; an individual-progress program that uses contracts based on extensive diagnostic-prescriptive information; continuous curriculum modification; parental involvement; an inservice training component; writing of performance objectives; heterogeneous grouping; extended field trips of two or three days in length; a curriculum that interrelates reading and mathematics with reinforcement through gaming and simulation; a teacher and an instructional aide assigned to a classroom of 20 students; 70% of the classroom work done in an individualized learning situation and the other 30% done in small groups of from two to seven students; regular home visitation by project staff; dinner meetings for parents, students, and program personnel.
- Montessori Method.[6] Low pupil/teacher ratios; extensive special facilities; equipment and materials designed for pre-academic curriculum; education of the senses; room for intellectual work; houses adapted for children and not for adults; complete equipment for the management of a miniature family;

REPORT CARD
GODDARD SHERMAN

"This isn't what I meant when I said I hoped you would go down in history."

pleasing artistic pictures changed from time to time; education of the motor skills; sensory education; oral and aural language education, including material referents of arithmetic as a language; and extensive specialized materials for instruction in each of the major curricular areas.

- Enriched Curriculum (Institute for Developmental Studies Program).[7] Emphasis on cognitive areas of language, perception, and concept formation, as well as on the affective area of self-concept; individualized instruction; small instructional groups; progress at a child's own pace; emphasis on inservice training; special teaching materials; a high degree of both quantity and quality of teacher supervision; home visits; parental involvement; creative dramatics; a language laboratory.
- Diagnostically Based Curriculum.[8] Individualized instruction based on evaluations made by four professional specialists who worked with the teacher in the classroom and provided diagnostically derived lesson plans; seven professional specialists as consultants; use of each teachable moment; new concepts demonstrated as well as explained; concrete reinforcement or social approbation; evaluations of individual children's performance in any activity; audiovisual aids; specially painted murals.
- Success Environment.[9] Positive behavior modification; teachers adhering to a philosophy of "ignore and praise" – that is, rewarding suitable behavior while disregarding improper conduct; throughout the first day and several days thereafter, immediate primary reinforcement (e.g., candy) paired with praise and token reinforcement, contingent on approximations of desired social conduct; during the third and fourth months intangible rewards replaced with activity reinforcers; pupils trade tokens for access to the activity room, supervised by paraprofessional aides; five academically oriented interest stations (a library station with books, magazines, and newspapers; an arts station with paints, crayons, etc.; a communication station with a language master, phonograph, and tape recorder; an exploratory station with science materials keyed to the instructional program; a games and puzzles station equipped primarily with academically related materials changed at least weekly by paraprofessional aides); carefully designed training of teachers in the theory and practice of behavior modification; an experienced behavioral management technician available at least twice weekly to assist teachers with current problems in classroom management; individual inservice training sessions on curriculum implementation conducted weekly by two curriculum coordinators.

> *If the funds were available to implement these methods on a large scale, the effectiveness of our educational system could be markedly improved.*

"Frankly, aside from a little more light, I don't see what they get out of it."

Note the similarities between the Success Environment and the Diagnostically Based Curriculum. These are attributable, perhaps, to the participation of a common author, Boyd McCandless.

Results obtained in evaluations of these augmented methods of conventional teaching suggest that, if the funds were available to implement them on a large scale, the effectiveness of our educational system could be markedly improved. Reported results include the following:

- increases in Stanford-Binet I.Q. scores, ranging from 15 to 20 points, and, compared with conventional at-home treatments, performance on language tests increased by factors as high as 4.2;
- reduction in the number of classroom disruptions by a factor of 4.5 and, compared with conventional school instruction, Columbia Mental Maturity Scale I.Q. scores increased by factors as high as 13.8 plus grade-equivalent gains on tests of reading and mathematics achievement of 3.2 and 3.4 years respectively;
- improvement in scores on an anxiety scale by factors ranging from 2.4 to 9.0, and a sixfold increase in the proportion of students whose performance on academic achievement tests increased by one grade-equivalent or more during the year of evaluation; and
- gains in Stanford Achievement Test scores in reading, arithmetic computation, and arithmetic concepts by factors of 2.7, 6.7, and 4.7 respectively (compared with gains predicted by interpolation from national norms).

These results suggest that, in some areas of instruction, excellence can be achieved by appropriate modifications in teaching procedures. However, most of the modified procedures are quite costly. The categories that follow contain many examples of less costly alternatives that have produced comparable results. Some of these procedures – when embedded in suitable school and classroom management practices and an updated infrastructure and especially when used on a large scale – promise to cost *less than* the teaching methods now in common use.

Conventional Tutoring as a Supplement to Conventional Teaching. None of the seven examples of this category used professionally trained teachers as tutors. Otherwise, the examples of conventional tutoring in the collection are fairly representative of conventional tutoring as a classroom practice.

Within its limits, conventional tutoring is tutor-centered in the same way that conventional teaching is teacher-centered. Outside the classroom, tutors may be fully responsible for teaching objectives, teaching materials, and methods. As conventional tutoring is ordinarily used in schools, the instructional objectives and materials are usually specified by the supervising teacher or by the school. General tutoring procedures are usually controlled by the teacher, but the tutor is not given a detailed or formal program to follow. As a consequence, tutors must improvise some or all of their teaching methods, and in some cases they may improvise teaching materials as well.

Three of the seven exhibits classified as conventional tutoring presented data on the performance of student tutors as well as tutees. The data indicate that the academic benefit for student tutors (cross-age or peer tutors) can be as great as or greater than that for the tutees.

In the Youth Teaches Youth Program, evaluated by Robert Cloward,[10] 10th- and 11th-grade students tutored fourth- and fifth-grade pupils in reading. The student tutors were given approximately 68 hours of training before and during a 26-week period of tutoring; they were also supervised by professional teachers during the tutoring. Each tutor worked after school with two tutees – one for four hours per week, the other for two. For tutees, gains in reading performance on the New York Tests of Growth in Reading were statistically significant for the four-hour group only, but the RPR (1.7) did not satisfy the criterion. For the tutors, whose reading achievement was also evaluated, the RPR equaled 2.0 for grade-equivalent gains on the Iowa Silent Reading Test and 6.4 for standard scores on the Iowa comprehension subtest.

In a small-scale study by Robert Morgan and Thomas Toy,[11] pupils from grades 8 through 12 tutored pupils from grades 2 through 5. Tutors were given much less training, less supervision, and more responsibility for technique than those in the Youth Teaches Youth Program. In this study, RPRs greater than 2.0 were reported for both tutors and tutees on reading, spelling, and arithmetic subtests of the Wide Range Achievement Test. As in the preceding example, differences in gains as indicated by the values of RPR were greater for tutors than for tutees.

In a third study,[12] in which underachieving ninth-graders tutored fourth-graders in mathematics (fractions), both tutors and tutees gained significantly more than their control groups, but only the difference for the tutees satisfied the criterion. The RPR was 2.01 for tutees; 1.97 for tutors. Four other studies in the conventional tutoring category examined data for tutees only.

Some of these procedures – especially when used on a large scale – promise to cost less than the teaching methods now in common use.

Content Modification in Conventional Teaching. Methods in this category are identified with special characteristics of *what* is taught rather than how it is taught. They are constructed by specifying the logic or organization of the subject matter or the relative emphasis given to particular content components. Teaching techniques may be left unchanged or altered in minor detail as necessary to accommodate special characteristics of content, as, for example, when the International Teaching Alphabet is substituted for the standard English alphabet in the teaching of reading. John Downing makes clear the difference between content and procedural changes: "In both the experimental and control classes the teachers have been asked not to change their normal methods of teaching but to operate their usual timetables and instructional procedures."[13]

Another clear example of content modification is L.N. Landa's Algorithmization Technique,[14] in which aspects of Russian grammar were reduced to precisely formulated rules, or "algorithms," then taught by conventional techniques. In the evaluation study, both algorithmized and standard grammar were taught traditionally. The performance of the two groups was compared on three criterion tests, with differences in favor of the experimental group, with RPRs of 5.0, 5.11, and 6.6. Landa's use of algorithmization should be contrasted with programmed instruction (below), in which teaching technique rather than content is algorithmized.

A particularly effective example of content modification is John Leland Carter's Language Stimulation Method.[15] Traditional small-group teaching methods were used to present content that is defined as "the first 40 daily lesson plans from the Peabody Language Development Kit." Content is thus loosely programmed or, in Landa's term, quasi-algorithmized, but teaching technique remains conventional, i.e., it is determined primarily by the teacher. Gains in I.Q. and psycholinguistic abilities were both markedly increased, by factors of 2.3 to 6.3. Follow-up measures of I.Q. and reading performance indicated that much of the effect of the 10-week, 33-hour exposure to the language stimulation curriculum was demonstrable six years later.

Other forms of content modification are often described as different methods, though they differ significantly only in content. Consider, for example, the basal reader and the phonics methods for teaching reading. Both are ordinarily taught by conventional techniques for teaching beginning reading, and teachers who use them ordinarily teach all the traditional knowledge and skill components of reading: letter names, letter and letter-group sounds, oral reading, and the meaning of words and sentences. The methods differ chiefly in the relative emphasis given to meaning and to grapheme-phoneme rules and to the order in which content components are presented.

Procedural Modifications of Conventional Teaching. A broad definition of procedural modifications of conventional teaching would include almost all the other categories of conventional instruction; the exceptions are conventional teaching and, perhaps, content modification. Programmed learning and programmed teaching are also procedural modifications.

To avoid this overlap, I have defined procedural modifications narrowly, as a relatively simple and conventional change in a teacher's skill or practice. Surprisingly, this definition included only two examples, and, strictly speaking, only one of these qualifies as a modification of teaching practice. One example is reported in Robert Rosenthal and Lenore Jacobson's paper.[16] This study is unorthodox, and its method could not be applied without radical change; but its results and their implications are clearly of notable educational significance.

The experimental and control subjects in this study – some 620 pupils in grades 1 through 6 in 17 classrooms averaging 36 pupils each – were given appropriate forms of a standardized, relatively nonverbal measure of intelligence: Flanagan's Test of General Ability. However, the researchers told the teachers it was the "Harvard Test of Inflected Acquisition." The teachers were later given the names of approximately 20% of the children in their respective classes and led to believe the false proposition that the scores of these pupils on this "test for 'intellectual blooming' indicated that they would show unusual intellectual gains during the academic year." Actually, the children who were named constituted the experimental group (before attrition due to turnover) and had been chosen randomly from the pretested group (the entire school population). Thus, by implication, the teachers were led to believe the true proposition that the unnamed 80% (who constituted the control group) were not expected to make unusual intellectual gains.

After eight months of instruction by teachers so indoctrinated, the children were retested. Differences in I.Q. gains for the experimental and control groups, which the authors of the study attributed to "teachers' expectations," were statistically significant for the first and second grades and for all grades combined; mean gains for the first- and second-grade experimental groups were 27.4 and 16.2 I.Q. points respectively. When these gains were compared with gains for the control group, the corresponding RPRs were 2.28 and 2.36.

Considered as an evaluation of teaching methods, this study is unique. The teaching method is not specified for either the experimental or the control group. All that is known with reasonable certainty is that the teaching methods used for members of the two groups were different, and even this must be inferred from other information, including the experimental and control treatments of the teachers and their effects on the performance of the pupils.

Despite these "defects," however, the study provides indirect, but convincing, evidence that variations in teaching practice can produce significant differences in pupils' learning. By demonstrating some of the consequences when teachers hold optimistic or pessimistic views of the learning potential of their pupils, this study indicates that a teacher's attitude can be an important determinant of a pupil's performance. This evidence may be criticized, but it should not be ignored by those concerned with the improvement of teaching.*

The second example of procedural modifications of conventional teaching is the Community Integrated Procedure evaluated by Karnes.[17] Disadvantaged children were taught conventionally in socioeconomically integrated classes. "Presence of an advanced peer language model" was assumed to be the "central" experimental variable. Four RPRs, ranging from 2.06 to 8.00, satisfied the criterion that the RPR must be greater than 2. This example is perhaps better described as "miscellaneous" or as an administrative procedure than as a modification of a teaching procedure.

Programmed Learning. Broadly defined, programmed learning is a form of self-instruction in which student interactions with teaching materials (e.g., samples of the natural world or transformations of it such as those found in laboratories, shops, pictures, books, computers, and human behavior) are prescribed by detailed instructions or "programs" designed to produce or facilitate learning. The design of the program and the selection or design of the teaching materials may be governed by scientific principles of learning, by other knowledge or principles, by the art of teaching, by instructional objectives, or by any combination of these.

In practice, however, programmed learning is defined more narrowly. The term "programmed learning" commonly refers to relatively simply structured forms of self-instruction, first proposed systematically by B.F. Skinner,[18] in which procedures specified in the programs are based primarily on the concepts of positive reinforcement, operant conditioning, and informational feedback.

Programmed learning can be seen to have much in common with the recitation method, a teaching procedure widely used in the conventional classroom setting.

In these programs, though it is not required by these principles, complex or extended subject matter is ordinarily reduced to a sequence of small units or frames, each of which poses a problem that represents an explicitly defined instructional objective (e.g., a question to be answered or some other task to be performed) and provides informational feedback that enables a learner to evaluate the adequacy of his or her response in relation to the objective. If the learner judges his or her response to be adequate, this feedback is assumed to provide reinforcement; if not, the feedback presumably facilitates the formation of a better response to similar or different subsequent frames or other test situations. Described in these relatively nontheoretical terms, programmed learning can be seen to have much in common with the recitation method, a teaching procedure widely used in conventional classrooms.

Insofar as the instructions that the student follows and the information that the student is given after responding are communicated in print, the use of programmed learning is essentially limited to pupils who can read. For this reason, programmed learning is seldom used to teach beginning reading. Experience gained in the 50 years since programmed learning was first developed suggests that it may be thought of as a special form of self-instruction that enables those who can read, but are not fully literate, to learn more easily from print. As a means of instruction it is generally more tolerant of inadequate literacy than are most conventional books.

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*Because of the unorthodox nature and the potential importance of the Rosenthal/Jacobson study, it should be added that, while several studies using similar procedures have obtained similar results, others have not. Further research is required to determine the conditions necessary to produce this expectancy effect – and perhaps to use it to benefit pupils.

Programmed learning was first systematically developed for instructional purposes between 1925 and 1950. A catalog listing more than 2,000 programs, chiefly of U.S. and British origin, and representing a wide variety of academic and vocational curricular areas, from preprimary to university levels, was published in 1972.[19] Clearly, these programs are not widely used in U.S. schools. However, programmed learning has been adopted as a major technique for industrial and military training, perhaps because highly specific curricular requirements, a shortage of teachers with suitable technical training, irregular enrollment times, and other practical constraints rule out many conventional solutions to the problems posed by training.

The Open University of Great Britain[20] provides an exceptional but important example of the academic application of programmed learning. The programmed learning technology used by the Open University satisfies the narrow definition of programmed learning, but it employs very large rather than small frames and in other ways more closely approximates conventional teaching procedures. The basic programmed instruction is supplemented with several conventional teaching procedures – lectures, demonstrations, laboratories, and tutoring – that provide the student with a variety of experiences and opportunities to practice skills not easily acquired exclusively from books, programmed or unprogrammed. The Open University is a full-scale production model of a system for general education at the university level that uses programmed learning from books for approximately 85% of a student's instructional time. Simultaneously, it is an experiment that provides a large-scale evaluation of that system. Instituted in 1971 with about 25,000 students, the Open University has since more than tripled its initial enrollment, and its success is further certified by the organization of other universities on similar plans in other countries.

"I usually stay home alone after school. I have Mom's work number, and she has mine."

The Open University of Great Britain provides an exceptional but important example of the academic application of programmed learning.

The curriculum of the Open University is as varied as that of most British universities, but its students are more varied, ranging from the unemployed to those who are confined for various reasons (including prisoners). Many of these students would not have been admitted by other British universities. However, the graduates of the Open University are judged to be the equivalent of graduates of other British universities and are accepted by them as graduate students. Costs per student to the British government, which funds the university, are approximately one-third those for other British universities, and costs to the student are approximately one-fifth of student costs at other universities.

The primary teaching method of the Open University is properly classified as programmed learning, but it differs significantly in the size of the learning units. The Open University form of programmed learning might be described as a programmed library.

Apparently, the teaching effectiveness of the large-frame form of programmed learning used in the Open University plan is, so far, not equal to that reported for the more common small-frame forms. It appears to be no better than that of more conventional models of university teaching (the RPR is approximately equal to 1). However, even without improving teaching effectiveness, the Open University remains a model for economy and cost-effectiveness in university-level and, perhaps, secondary-level instruction.

Seen from the point of view of its funding agency, the cost-effectiveness of the Open University system now appears to be approximately three times that of conventional university systems. But from the point of view of the student, the more important index of relative cost-effectiveness may be the personal one – the ratio of teaching effectiveness to personal cost – which for the Open University system has a value of 5. It is this ratio that determines whether more students will obtain a university education.

Programmed Teaching. Broadly defined, programmed teaching, which includes programmed group teaching and programmed tutoring, is a method of teaching in which the interactions of teacher, pupil, and teaching materials are specified in detail. Content is specified by tightly prescribed materials and content programs; teaching procedures are specified by complete and unambiguous operational programs. Instructions are presented in printed form to a teacher or tutor, who relays them orally to pupils.

To one who observes programmed teaching in practice and does not know that the teacher or tutor is following a tightly structured program, teacher/pupil interactions are not noticeably different from those in traditional forms of classroom recitation, nor, if the behavior being taught is complex and not primarily verbal, would they appear different from forms of the project method. But, when the programs that control the teachers' activities are examined, they are found to differ only in detail from those of programmed learning.

As in programmed learning, programs for a single frame (called an "item" in programmed teaching) typically begin with the presentation of a problem or question or a request for the pupil to perform a verbal or nonverbal task. What follows is performance-based in that it depends on the pupil's response. An acceptable response is ordinarily followed by praise from the teacher or by some other indication that the response was correct. Again as in programmed learning, an unacceptable response is followed by teaching, i.e., the presentation of information designed to facilitate a correct response to the same or related items. For a simple task, the teaching may consist of the demonstration of an acceptable response, e.g., a correct answer to a simple question; for a complex task, the teacher may demonstrate, describe, explain, or otherwise present all or parts of the task that the pupil failed to perform adequately. Finally, the pupil may be given another opportunity to perform the total task that he or she initially failed. The response to this second opportunity to respond is very likely to succeed because of the teaching that immediately preceded it. If the pupil succeeds, the success is recognized or rewarded; if not, the failure is ordinarily ignored and the program proceeds to the next item. This last procedure maximizes the opportunities for success and reinforcement.

One of the more useful functions of programmed teaching is to enable those who lack special training in teaching to teach well. If the teacher or tutor is not expected to be an expert in the subject matter to be taught, the program can be designed so that the necessary knowledge is carried by the teaching materials.

One of the first programmed teaching programs to satisfy the RPR$\geq$2 criterion, the Bell System First Aid and Personal Safety Courses,[21] was designed to improve an existing course ordinarily taught by persons who were qualified in first aid but not in teaching. In evaluating this course, the objectives of both experimental and control courses were defined as the ability to meet the Red Cross requirements for the standard first-aid certificate. The mean gain on a criterion test by pupils taught in the programmed course was nearly five times that for the conventionally taught control group (RPR=4.74); there was no overlap between gain scores for the two groups. The 10-hour instructional time for the conventional course was reduced by 25% (RPR=1.33), giving an efficiency ratio of 6.30. As administered to employees, the 10-hour course required two days, the 7.5-hour programmed course just one day; as a result, instructional costs were reduced by almost 50%.

If the teachers for whom a programmed teaching course is designed are not trained in the subject matter to be taught, the course may be designed so that necessary subject-matter information can be obtained from an appropriately designed text, from more conventional books, or from other teaching materials. In that case, the primary function of the programmed teacher or tutor may be little more than the management of pupil interactions with teaching materials.

SCHOOL BUS STOP
REPORT CARD

"According to my own figures, I don't deserve a C- in math."

Both programmed group teaching and programmed tutoring have been used successfully to teach reading skills and other academic subjects at the secondary and adult levels. But most applications have been directed toward preschool through third-grade levels, at which children may not be sufficiently literate or self-disciplined for programmed learning.

Examples of widely different forms of programmed tutoring that satisfied the RPR$\geq$2 criterion include Alan Hofmeister's Telepac Programs,[22] which enable handicapped children to be taught basic survival skills by their parents at home, and Peter Rosenbaum's Peer-Mediated Instruction Techniques,[23] which have been used to teach English to adults, to enable third-graders to teach one another to spell, and to enable secondary school students to teach one another remedial reading and mathematics.

An outstanding example of programmed group teaching is Carl Bereiter and Siegfried Engelmann's Direct Instruction Method,[24] first evaluated at the preschool and first-grade levels with disadvantaged children. In comparisons with several other methods, this procedure satisfied the RPR$\geq$2 criterion for gains in Stanford Binet I.Q. scores and California Achievement Test scores in reading and mathematics. In a later national study,[25] in which 13 teaching techniques developed by leading educators were compared, the Direct Instruction Method produced substantially higher average effects than any other model evaluated. Although it was classified (by content) as a basic-area model by Project Follow Through analysts, in overall ranking of the 13 methods on multiple measures in the basic, cognitive, and affective areas, Direct Instruction placed first in all three areas.

Performance-Based Instruction and Design. Performance-based instruction and performance-based instructional design are two applications of a very basic principle of instruction: namely, that what is taught and how it is taught should be based on comparisons of pupil performance with instructional objectives.

Performance-based instruction is a general term referring to any form of teaching in which the activities of the teacher or learner during a unit of instruction are based on information derived from individualized "diagnoses," that is, from comparisons of instructional objectives and pupil performance made during the same unit of instruction. The "teacher" may be a person (including, in the case of self-instruction, the learner) or a mechanism such as a book, a teaching machine, or a computer. The performance information is obtained from the responses of pupils to test situations, such as frames or test items, that are integral parts of the instructional process rather than separate formal tests. The instructional decisions that are made on the basis of the comparison of performance with objectives are intended to increase the likelihood of agreement between performance and objectives.

Some of the most obvious examples of performance-based instruction are the procedures of programmed learning and programmed teaching, as narrowly defined earlier. In these techniques, a learner's response to a frame or item is ordinarily followed by reinforcement if the response is acceptable or by the presentation of remedial information if it is not. Both treatments are designed to increase the likelihood of appropriate responses to the same or similar test situations in the future.

In addition to the fully programmed forms of instruction just mentioned, a third form of performance-based instruction, analyzed in some detail by Taylor and his colleagues,[26] is a partially programmed form that Taylor calls "performance-oriented instruction." In this technique, the program that the teacher and pupil follow consists of a detailed statement of instructional objectives, supplemented by additional instructions to the teacher to base instructional decisions and procedures on test situations improvised or chosen to represent each objective. For the benefit of underqualified teachers, this minimum may be further supplemented by other information.

Performance-based instruction does not include such teaching practices as drills and lectures given from a written text, which involve teacher and pupil activities that are not contingent upon in-course pupil performance. However, insofar as the form or content of these techniques is determined by instructional objectives, they may be described as *objectives*-based instruction.

From a social point of view, one of the major virtues of fully programmed performance-based instruction is that it can provide a remedy for many of the defects of tests, false teacher expectancies, and other sources of bias, such as stereotyping and associated cultural and racial prejudices. Instructional programs that individualize treatments on the basis of pupil performance alone are difficult to bias on the basis of less-relevant pupil characteristics.

Unprogrammed performance-based instruction is best suited for use by well-qualified teachers – those competent to make appropriate in-course instructional decisions quickly. In fully programmed techniques such as programmed learning and programmed teaching, on the other hand, essentially all important instructional decisions concerning how and what to teach are programmed in detail in advance, so that these techniques are better adapted for use by nonprofessionals or otherwise unqualified or underqualified teachers.

Both performance-based instruction and performance-based instructional design depend for their choice of procedures on information obtained by comparing pupil performance with instructional objectives. But in performance-based instructional design the information concerning pupil performance is obtained in advance. It is not applied immediately to make decisions in an ongoing teaching process. Instead, information obtained in one tryout of a particular teaching procedure with one group of pupils is used as the basis for revising the design of that procedure for the group, not for the individual, and the effectiveness of the revised technique is evaluated in a subsequent tryout. This process of revision and refinement may be repeated indefinitely, or it may be terminated when a design is found that consistently produces an acceptable match between pupil performance and instructional objectives.

In conventional instruction, many variants of performance-based instructional design have been developed implicitly for particular conditions and purposes. In those cases, performance-based instructional design is likely to appear only in abbreviated, informal, or intuitive forms.

Taylor and his colleagues[27] have reported evaluation data for applications of what they call "performance-oriented instruction" to 16 subjects or courses in a military training curriculum. Of these, 15 satisfied the $\mathrm{RPR} \geq 2$ criterion. These results, obtained in one of the earliest large-scale applications of performance-based instructional design, represent one of the more notable achievements in the history of instructional systems design technology. The results reported for this research and development have had a significant effect on technical training in the U.S. military services. With the publication in 1975 of a six-volume training manual for instructional designers, titled *Interservice Procedures for Instructional Systems Development*,[28] the use of performance-based instructional design to improve the quality and productivity of instruction became standard practice in *all* four military services. General education has not followed a similar path.

> *One of the more useful functions of programmed teaching is to enable those who lack special training in teaching to teach well.*

In his *Taxonomy of Educational Objectives: Cognitive Domain*, Benjamin Bloom[29] identified several of the key principles necessary for translation from the language of training to that of academic education. First, he described academic test items and examination questions as illustrations of educational objectives; second, he called most of these illustrations examples of intellectual skills rather than knowledge.

James Sherrill[30] applied performance-based instructional design during 16 successive presentations of a relatively conventional nine-week training course in military court reporting. Instructors were qualified by experience and training as military court reporters but had no prior professional qualifications as teachers. Sherrill described his procedure as follows:

> The continual formal evaluation took the form of, class after class, course supervisor and the instructors reviewing the results of the [criterion] test, identifying those items most frequently missed, and adjusting their next presentation . . . in hopes of reducing the miss rates of the scorable test items.

Improvement in student performance in successive classes was progressive but irregular. Using the performance of the first class as a baseline, the RPR$\geq$2 criterion was satisfied by the fourth class and approximately two years later by the 15th and 16th classes of students with RPRs of 2.2, 2.56, and 6.25 respectively.

Another example of performance-based instructional design is of special interest because of its successful application to academic instruction in a public school setting. In Ralph Melaragno's study,[31] reading performance of first-, second-, and third-grade pupils in one school was scored on standardized tests annually for a five-year period during which conventional teaching of reading was supplemented by conventional tutoring. During this period both performance-based instruction and performance-based instructional design were applied continuously to improve instruction. Melaragno summarized his procedures as follows:

> The reading instruction used is objectives-based; it contains clearly specified instructional objectives along with materials and procedures designed to enable students to achieve the objectives. An integral part of such objectives-based instruction is the incorporation of frequent testing procedures that indicate to a teacher which objectives a student has mastered and which skills require further instruction. . . .
>
> All aspects of the school – instructional programs and support programs – are monitored by means of a program evaluation conducted every 10 weeks. This monitoring system provides information concerning progress toward objectives and ratings of effectiveness of program elements. It yields information on strengths and deficiencies so that staff involvement, planning, and decision-making can be carried out accurately and efficiently. Detailed data are collected on each student's progress; modifications to the total program and allocation of resources are made whenever the monitoring system indicates the need.

Overall, Melaragno's data indicated that year-to-year improvements in pupil performance were large, relatively continuous, and cumulative. The RPR$\geq$2 criterion was satisfied in 15 comparisons.

Two other examples in the collection of studies[32] used experimental designs similar to those of Sherrill and Melaragno (successive applications of the "same" teaching procedure) and reported improvement similar to theirs. Context information suggests that some form of performance-based instructional design was used, but since no explicit reference was made to comparisons of objectives and performance, credit for the improvement should perhaps be given to experience – an implicit or covert form of performance-based design.

COSTS AND COST-EFFECTIVENESS

Costs per se are mentioned in only two studies in the collection,[33] both of which evaluated full-scale working educational systems rather than teaching methods. In both cases, large reductions in costs were achieved with no evidence of reduction in the quality of instruction and with some indication of other benefits. Both studies report programmed instruction as the primary instructional technique. In one case, university students learned primarily at home, using programmed learning. In the other, a combination of programmed teaching and programmed learning was used for elementary-level instruction within a radically new school organization and management system. In both cases, performance-based instructional design played a prominent role in the development of teaching procedures and materials. The Open University system described above increased the cost-effectiveness of university education by a factor of three and improved the personal cost-effectiveness to students by a factor of five.

"Take a close look, and you'll see conclusive proof of my theory that Presidents are named after cities."

The IMPACT system (Instructional Management by Parents, Community, and Teachers) for elementary instruction was developed experimentally but on a relatively large scale in the Philippines.[34] With the exception of art, music, and a few nonacademic subjects, which were taught conventionally by visiting teachers and community volunteers, the entire elementary curriculum was taught using the IMPACT system. In this system, first-, second-, and third-graders were taught in groups of 10 to 12 by fourth-, fifth-, and sixth-graders. These student teachers followed programmed group teaching procedures[35] adapted from the programmed tutoring techniques developed by me and my colleagues.[36] The older pupils taught themselves, individually and in spontaneously organized small groups, using a special form of programmed learning, the "module system." Each of these older pupils also spent one hour per day teaching 10 to 12 younger pupils with programmed teaching procedures.

In each of five rural schools with enrollments of approximately 200 pupils, two instructional supervisors – professional teachers with special training in the IMPACT system – were responsible for management and supervision of the instruction. Beyond supervision, an instructional supervisor did no personal teaching except to train students to participate as learners and teachers in the system and occasionally to tutor pupils

Large reductions in cost were achieved with no evidence of reduction in the quality of instruction and with some indication of other benefits.

who transferred in from conventional schools. The set of five schools using the IMPACT system was administered by a "rural coordinator/education analyst," or roving principal, responsible for both administration and overall academic supervision.

An evaluation of the teaching effectiveness of the IMPACT system, using external examiners who administered national tests that had been developed a few years earlier to evaluate conventional elementary school instruction, showed that, for all programmed subjects combined, scores for pupils from IMPACT schools were 9% higher than those from comparable conventional schools (RPR = 1.09); costs were almost exactly 50% lower (RPR = 2). Relative to the conventional teaching system used in control schools, cost-effectiveness was more than doubled (RPR = 2.18).

COST ESTIMATES

Although cost data were not given in other studies in the collection, relative costs and relative cost-effectiveness can often be estimated with some confidence from data that are routinely reported in comparative evaluation studies (see Table 1). Using only RPRs for instructional time and a knowledge of wage and salary scales for tutors and teachers, it is possible to obtain useful estimates of relative costs. Then, given an RPR for teaching effectiveness, it is possible to estimate relative cost-effectiveness and – using the common assumption that instructional costs are 80% of the total costs of an educational system – relative cost-effectiveness of the system.

For conventional tutoring and programmed tutoring, costs vary primarily with the wages paid to tutors. With unpaid tutors (e.g., students or volunteers), especially in small-scale tutoring operations, cost increases may be negligible. In that case, the RPR for cost is approximately equal to 1 and the RPR for cost-effectiveness is equal to that for teaching effectiveness. In most cases, this is also the case with content modification and procedural modification.

Although costs for methods in the category of augmented conventional teaching cannot be estimated with any confi-

TABLE 1.
Estimates of Instructional Costs

Section A: Conventional Instruction and Management Procedures

	Category	*Basic Program Unit Cost*	*Useful Life (Years)*	*Program Cost per Year*	*Program Cost per Hour*	*Pupil/ Teacher Ratio*	*Program Cost per Pupil-Hour*
CT	Conventional instruction	$25,000*	1	$25,000	$23.15	18*	$1.29
CMCT	Content-modified conventional tutoring	25,000	1	25,000	23.15	18	1.29
PMCT	Procedure-modified conventional tutoring	25,000	1	25,000	23.15	18	1.29
CtCT	Unprogrammed tutoring within conventional tutoring (unpaid tutors)	25,000	1	25,000	23.15	18	1.29
ACT	Augmented conventional tutoring	25,000 +	1	25,000 +	23.15 +	9	2.58 +
MLC	Monitored learning center	25,000	1	25,000	23.15	81	.29

Section B: Independent Study Supplements to Conventional Instruction

	Category	*Basic Program Unit Cost*	*Useful Life (Years)*	*Program Cost per Year*	*Program Cost per Hour*	*Pupil/ Teacher Ratio*	*Program Cost per Pupil-Hour*
CBB	Conventional book-based self-instruction	$ 180	3	$ 60	$ .06	1	$ .06
CT	Conventional tutoring (unpaid tutors)	0	1	0	.00	1	.00
Ct	Conventional tutoring (paid tutors, $5/hr.)	5,400	1	5,400	5.00	1	5.00
PL	Programmed self-instruction**	180	3	60	.06	1	.06
Pt	Programmed tutoring (unpaid tutors)	180	3	60	.06	1	.06
PT	Programmed tutoring (paid tutors, $5/hr.)	5,580	1,3	5,460	5.06	1	5.06
PGT	Programmed group teaching*** (unpaid teachers)	180	3	60	.06	9	<.01
CAI	Computerized programmed learning	3,680	5	736	.68	1	.68
CDI	Computerized programmed group teaching	3,850	5	770	.71	9	.08
PBID	Performance-based instructional design	0	NA	NA	NA	NA	0

*Source: U.S. Office of Education (and, in the case of unit cost, the assumption that teacher salaries represent 80% of instructional costs).
**In the Open University and IMPACT plans.
***In the IMPACT plan.

dence from the information given in reports, it is apparent that they are among the highest in the collection – so high that, despite the general effectiveness of augmented conventional teaching, these methods are probably less cost-effective than ordinary classroom instruction. They are certainly less cost-effective than many methods in other categories.

Despite the rather general assumption that one-to-one instruction is the best of all possible teaching methods, tutoring is often ignored as a possible solution to educational problems because of a second general assumption: that tutoring is the most costly of all instructional methods. Both of these assumptions derive from thinking of tutoring only in terms of the very special form of conventional tutoring used to teach the sons of British aristocrats and comparing its effectiveness and cost with the average effectiveness and per-pupil cost for conventional classroom instruction. Bertrand Russell, in *On Education*,[37] accepted both assumptions when he wrote, "However excellent might be the results of such a system, no man with a modern outlook would give it serious consideration, because it is arithmetically impossible for every child to absorb the whole time of an adult tutor."

But in particular cases, both assumptions may be questioned. The first may be questioned because of evidence indicating that some forms of tutoring are ineffective[38] and because of the complete lack of objective evidence concerning the effectiveness of the classical form of tutoring when effects of heredity, home environment, and parental influence are eliminated. The second assumption may be questioned because of evidence that tutoring, both conventional and programmed, can be done effectively by volunteers and unpaid students. The evidence provided by Peter Rosenbaum's data[39] and that of other examples in the conventional tutoring and programmed tutoring categories suggests that tutoring need cost no more than group teaching by professional teachers. Moreover, such findings show that, when tutoring is done by unpaid tutors, it can be several times as cost-effective as conventional teaching alone. Finally, cost and cost-effectiveness of tutoring, as for other methods, depend as much as or more on the management system in which the method is embedded as on the method itself.

It should be noted at this point that in some states the performance of instructional tasks by anyone other than professional teachers (though not by books or computers) is reportedly prohibited by law. If so, and if tutoring and monitoring are considered to be instructional tasks, then peer-mediated instruction, the IMPACT system, and some other forms of economy in educational systems discussed above are presumably illegal in those states.

In most of its applications, programmed learning is potentially the least costly of all the instructional methods represented in the collection. The cost, including program development costs, can be comparable to that for conventional textbooks and workbooks and is similarly affected by scale and amortization practices. As is the case for other methods, the costs of programmed learning vary with the management system in which they are used. As a supplement to conventional teaching used simply to replace conventionally written books, programmed learning can have a negligible effect on overall costs. Used routinely as a replacement for or supplement to oral instruction by professional teachers without corresponding changes in personnel tables, the effect on costs can also be negligible. However, with appropriate changes in organization, such as those in the IMPACT and Open University systems, reductions in overall instructional costs through the use of programmed learning can be large.

In most of its applications, programmed learning is potentially the least costly of all the instructional methods represented in this collection of 125 examples.

GLASBERGEN

"It may be society's report card, but it has your name on it."

Another potential saving can be realized by using programmed learning to help solve the problem of small rural schools. This problem is basically financial and common to most small and isolated schools and school systems.

> The background which prompted the state education department of Utah to use programmed instruction was the perennial problem of small rural schools with small groups of students in each class, needing more varieties or levels of subject matter than any single, or even area, school system could possibly provide. Stated

> simply, their needs ran far ahead of their ability to provide curricula suitable for a broad range of students. . . . A recent report . . . suggests that the problems of such small schools may exist in all but four of the 50 states.[40]

Variations of these problems are especially common in developing countries.

For similar reasons, programmed learning can also contribute to the solution of financial and manpower problems posed by the competition between schools and other institutions for the services of those competent to teach science, mathematics, and other subjects in which there is a shortage of qualified teachers. Prototypes of many of the necessary instructional programs have already been developed, and a number of these have satisfied the RPR $\geq$ 2 criterion for teaching effectiveness as well as for instructional costs.

SUMMARY AND COMMENTS

This article calls attention to a collection of 125 experimental comparisons of two ways of teaching the same subject or curriculum. In each comparison included in the collection, at least one value of a quantitative index of teaching productivity – such as effectiveness, efficiency, cost, or cost-effectiveness – was reported to be at least twice as large for one way as for the other (the RPR $\geq$ 2 criterion).

In 32 of these cases (26% of the total), the method that proved to be superior in the comparison may be described as a variant of conventional instruction. The remaining 93 cases (74% of the total) may be described as nonconventional instruction. Of these, 43 are examples of programmed learning, a highly structured self-instructional psychotechnology of teaching that is often combined with physical forms of educational technology. This technique is most widely used with mature students or adults. Twenty-nine are examples of a more recently developed form of programmed instruction, programmed teaching, which is better adapted for use with young children. In this technique, the teaching activities of a teacher or tutor – rather than the learning activities of the student – are programmed by means of (usually printed) instructions that are otherwise similar to those of programmed learning. Pupils taught by this technique need not be literate or know the oral language of instruction (or, for that matter, know any language). The remaining 21 examples are categorized as performance-based instruction or performance-based instructional design. Both of these categories in one way or another combine conventional and nonconventional instruction.

> *By changing present teaching methods, we can improve the quality of instruction by factors of two, three, or more, with no notable increase in cost.*

It is useful to think of this collection of research findings as a source of material for brainstorming sessions aimed at solving educational and social problems such as those posed by the authors of *A Nation at Risk*. In such sessions, we should discover that, from the purely educational point of view, there are not one but many problems to be solved, the total number depending on the number of subjects to be taught, the levels and types of education or training to be provided for, plus many other factors requiring special treatment.

The total number of problems is large, but it is encouraging to learn from the RPR $\geq$ 2 collection that many solutions are already far beyond the brainstorming stage. Many of the methods in this collection have been use-tested for practical feasibility as well as for potential productivity, and a few are available commercially. Others have survived equally stringent evaluation in large-scale field tests and are ready for commercial development and more general use-testing. A large number of promising ideas have been tested only in pilot studies, under more or less ideal conditions made possible by small-scale operations or generous research budgets. But such once-tested models are at least one step ahead of the untested ideas frequently produced by brainstorming, and they can provide useful starting points for the systematic research and development that must be undertaken if we are to achieve long-term solutions to large-scale problems of teaching productivity.

With two exceptions, no data on actual costs of the teaching methods evaluated were given in the source reports. In many cases, however, it was possible, by using information routinely provided in experimental evaluation studies and by making reasonable assumptions, to obtain useful estimates of relative cost and cost-effectiveness. These estimates indicate convincingly that, by making changes in present teaching methods, we can improve the quality of instruction indicated by academic and later real-world performance of pupils, and we can do it not by a few percentage points but by factors of two, three, or more, with no notable increase in cost. Costs can be reduced to a similar degree with no sacrifice in the effectiveness of instruction. Especially when new organization and management procedures are introduced to take advantage of the potential economy of teaching methods that facilitate delegation, *large increases in effectiveness of instruction are not at all incompatible with large reductions in cost.*

In drawing conclusions from the information I have summarized here, it is well to remember that the collection of studies was assembled in a relatively informal and unsystematic way. The collection contains many items that a critical scientist, *as scientist*, would probably reject. But as educators who are (or should be) looking to research for possible answers to practical problems, we are not acting strictly as scientists. We are acting as technologists, and in this role we cannot afford to be overcautious too soon. And, as members of the concerned public, we are in a position to ask those responsible why we are not teaching as well and as economically as the state of the art (or the technology) permits.

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TEACHERS' LOUNGE
SCHOOL
Mike Streff

"I understand you have an awfully large class this term. . . ."

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